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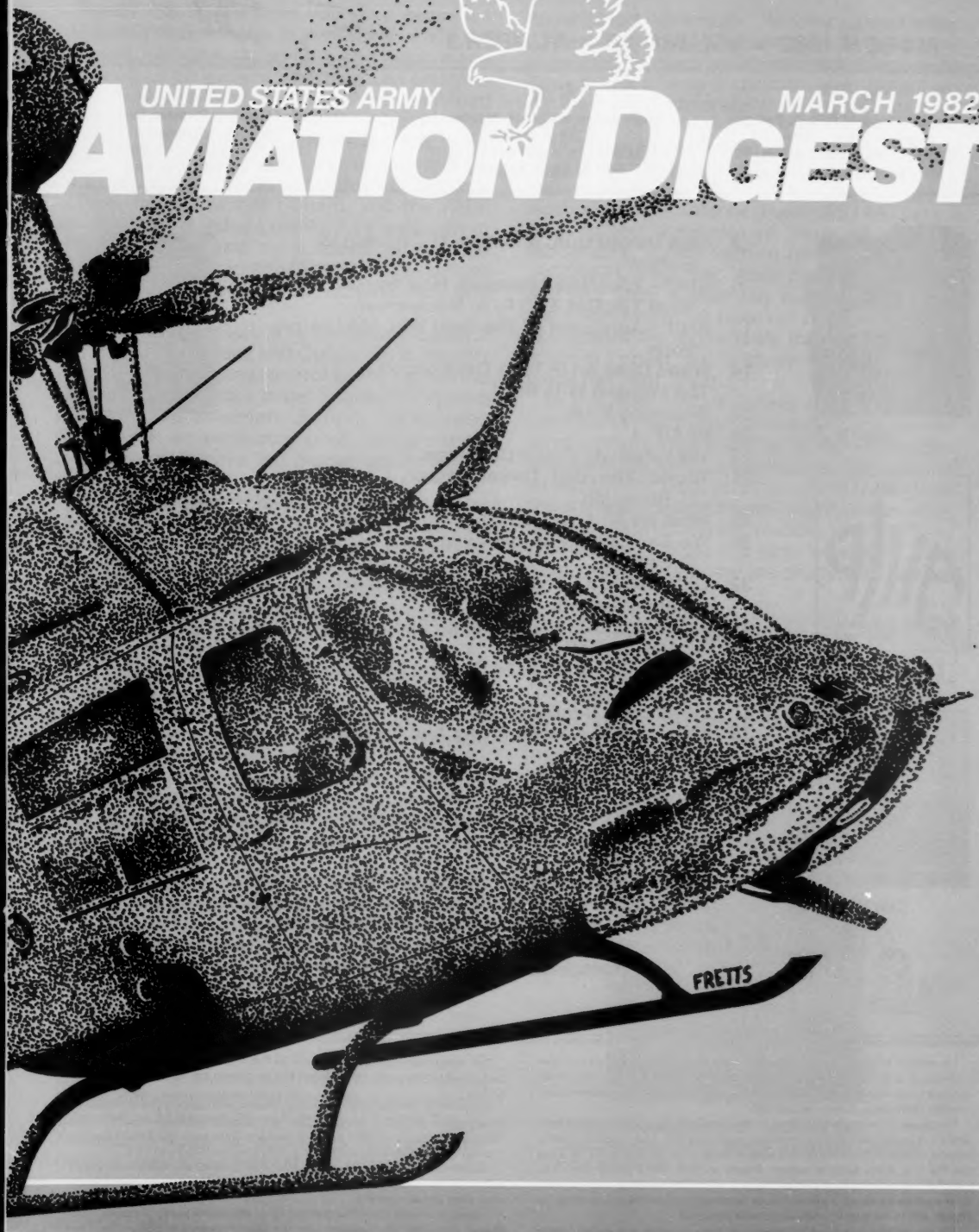

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Cover: **This is an artist's conception of the AHIP aeroscout that is currently being developed for the Army by Bell Helicopter Textron. The articles on pages 2, 6 and 11 describe the need, employment and characteristics. Illustration by Paul Fretts**

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Honorable John O. Marsh Jr.
Secretary of the Army

Richard K. Tierney
Editor

The mission of the ***U.S. Army Aviation Digest (USPS 415-350)*** is to provide information of an operational, functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine and other related data.

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"LET US HEAR from you" is a request I frequently make of you in the ***Digest***. And I am pleased with the responses and your many suggestions on ways in which we can enhance Army Aviation's contributions to the combined arms team.

In no other single area, however, has there been as much input as on the question of an improved scout helicopter. Your voices—our voices—have now been heard, and the AHIP development is today a reality. As a testimony to that and to bring you "up to speed" on this vital aviation issue, this month's ***Digest*** features articles delineating the scout need, its fulfillment and purpose.

First Lieutenant Ronald M. Buffkin is the author of "Give Us Our Guns and Optics." In it, he very tellingly relates his reasons for believing that the OH-58 Kiowa needs a target acquisition system and adequate armament. Further, he explains why he, as an aeroscout pilot, has a critical requirement to have the proper equipment to perform his job.

Similar pleas were heard and recognized as far back as 1972, declares Lieutenant Colonel R.A. Neuwien in "AHIP, Your New Aeroscout." He describes the involved course of action which started in 1978 and eventually led to the Army's entering "into full-scale engineering development to provide you, the user, with . . . the Army Helicopter Improvement Program aeroscout." LTC Neuwien also gives detailed descriptions of the aircraft's capabilities.

Once we have the AHIP on station, how is it to be used? Major Laurie Pope answers that question in "AHIP—Aeroscout of the Next War." According to Major Pope, the improved aeroscout "will fight in three organizations: attack helicopter companies, air cavalry troops and division aviation companies," and he discusses each of those employments.

Maintenance concepts are another important aspect that must be considered when a new aircraft is procured. "Keeping the Apache Flying and Fighting" by Major Troy J. Roop relates those concepts for the AH-64, which is now in its testing stage.

When the final decision is made that a new item of equipment is necessary to enhance mission accomplishment, it is not simply a matter of going to an industry source and making a selection. Materiel development and acquisition procedures take time. Meanwhile, what do we do? Major Everette L. Roper Jr. addresses that point with respect to air-to-air combat in "Helicopters—An Endangered Advantage." He very appropriately addresses improvements that can be made now in training, tactics and equipment to help ready Army Aviation for such combat—even before we get the more modern and more capable tools for the task.

As Major Roper notes, every iota of benefit must be obtained from our aviation training. We believe visits by the Aviation Center Training Analysis and Assistance Team (ACTAAT) are a boon to that achievement. Thus we are now introducing a new feature for the magazine, "ACTAAT Connection." While our Aviation Center ACTAAT team is relatively new, there are few units worldwide that have not been touched by its presence. And significantly, the team's objective is not to inspect, but to assist—and much assistance has been given.

In this new feature, issues acquired by the team from aviation field units will be commented on as a timely means of sharing this information with the Army Aviation community. We hope that all will benefit from this; for in reality, we don't find any really new problems in our business—they just appear in different places. The "ACTAAT Connection" will let you hear how other units have already overcome the challenges you are now facing.

Another bonus for you this month is a subject-area index of the ***Digest's*** articles for 1981. This is in response to the many requests we've had for such a listing, and it has been placed at the centerfold so it can be easily pulled out to save. Let us know if this meets your needs.

Major General Carl H. McNair Jr.
Commander, U.S. Army Aviation Center
Fort Rucker, AL

MONTHLY WRITING AWARD

SGT D. Edwards uses the XM-21 Stabilized Monoculars in the OH-58A to help adjust fires from indirect weapons.

LT Buffkin's article below is an excellent statement of the need for a better scout helicopter, from the user's standpoint. Read it, then read the two following articles on the Army's AHIP aeroscout. Afterwards, judge for yourself as to whether or not we are headed in the right direction to make a scout that can see, kill and survive.

Colonel Robert S. Fairweather Jr.
TRADOC System Manager
Scout Helicopter
Fort Rucker, AL

GIVE US OUR GUNS & OPTICS

An aeroscout's urgent plea for increasing our combat effectiveness

First Lieutenant Ronald M. Buffkin
Aeroscout Section Leader
B Company, 501st ABC
APO New York 09326

photographs by the author

AS A YOUNG OFFICER concerned with winning the first battle of the next war, I've always been told, "Train the way you are going to fight!" Like most aviators, I think I had the best flight instruction in the world. This training prepared me to do my job better than any opposing Soldier could do his or hers. All this added up to me as an Army aviator fitting nicely into the combined arms scheme.

Way back in flight school at Ft. Rucker, AL, I received my baptism of fire on the Army Aviation Center's academic battlefields of published doctrine and textbook tactics. My intructor pilot, a veteran of a war 10 years past, spent many hours imparting his skill and knowledge to me. I studied long and hard to master the tasks of the demanding Aeroscout Course in the Combat Skills phase of initial entry rotary wing training. When they pinned on my wings, I couldn't wait to get to my unit and really begin learning to be an effective scout.

Well, I've been in Army Aviation long enough now to see that there are two things in the Army's scout vehicle that urgently need to be addressed. I know there are more than a few opposed camps concerning the OH-58 Kiowa; but if we are going to take ourselves seriously then these two problems need to be corrected before the next war.

First, there is no effective target acquisition system on the OH-58. Second, there is absolutely no adequate armament on the OH-58.

Before anybody dismisses me as just another scout who's sore because I don't fly "snakes" or Black Hawks, let's look at what I do in combat. My job falls into basically one of two different categories of aeroscout missions. One is when I'm working as an air cavalry aeroscout in an air cav troop. In the cav role, my mission is to see the battlefield for the commander. I do this by a variety of tasks such as conducting reconnaissance, participating in security operations, rendering reports, locating pickup zones and landing zones and adjusting indirect fires and tactical air support. The other category is the attack aeroscout in an attack helicopter company. As an attack scout, my primary mission is to acquire targets while coordinating the movements of attack helicopters. In an attack company, not only do I acquire the targets for Big Brother, but I also assist in the search, identify targets, adjust and coordinate fires and even provide security for the AH-1 Cobras when they fire.

In both the air cav and attack mode then, I have to be able to "see." Whether I'm trying to provide early warning for a larger force on a screen or selecting key targets during an enemy armor penetration, I need to visually make contact with the bad guys. This is where we are seriously lacking now. We do not have an adequate system to enable aeroscouts to see.

To quote Field Manual (FM) 17-50, "Attack Helicopter Operations": "Priorities are: Detection and identification of the enemy at maximum possible distances from the friendly main body to prevent engagement of the main body under adverse conditions—unwarned, poorly deployed, not poised to fight." That's a tall order for the aeroscout to accomplish considering what we now have to do it with. The scouts in my section have basically four methods of "seeing" the enemy.

The first method is most common although severely limited. It's the standard "two per aviator" eyeball. The aeroscout's eyeball has a great field of vision, needs no batteries and usually there are two sets in the cockpit. It can be taught to look for visual clues and indicators on the battlefield, thereby increasing the chance for seeing the enemy first. A CW3 in my scout section once spotted an armored personnel carrier (APC) hiding under a haystack at 1,200 meters in very poor visibility. He used nothing more than the naked eye backed up by years of experience. He gave me a six-digit grid for the vehicle; and since the front windshield of my OH-58 was submerged under a thin sheet of rainfall, I did a pedal turn to look out my side door. That opening provided a much better view of the battlefield since I'd taken the door off that morning and there was no Plexiglas to collect water. I still couldn't spot the APC—which brings up my point about the eyeball. If my best scout could acquire targets only out to around 1,200 meters using the naked eye, then the eyeballs are severely limited by their range. If FM 17-50 asks for the scouts to see the enemy at the maximum distance possible, then the naked eye falls critically short of the task.

At the great distances and ideal ranges we will enjoy for the engagement of targets over here in Europe, we cannot afford to be limited by the short range of the eyeball. In all the major training exercises where we've had "aggressor" armor play, the use of the eyeballs invites contact at dangerously close ranges.

The next method we use for target acquisition is the standard military issue binoculars. While they are great for use by ground forces in a fixed location, an OH-58 just inherently vibrates too much for them to be practical in nap-of-the-earth flight. Occasionally I've had to land and dismount my observer and send him to a position to safely watch. In that situation, the standard binoculars come in quite handy. In fact, an aerial observer in the ground mode with a pair of binoculars is a very sound and effective technique. However, hand-held binoculars are just not suitable for use from the cockpit of a moving helicopter. The field of view is also limited in the binoculars; in most, it's about 40 degrees which does not lend itself to aeroscout work.

As a third method, we currently have the XM-21 Stabilized Monoculars. They are battery powered, with 10x magnification and about a 7.5 degree field of view. These are our best and most preferred pieces of target acquisition gear. They are light and handy and even have a battery strength indicator to show if you have enough power to operate the gyros inside. My complaint about the XM-21 is that you have to constantly press a rubber button to activate the stabilizing mechanism and even then the stabilized view you get has to be held relatively still. Just like with the standard binos,

SGT D. Skablakia, an aerial observer, demonstrates the use of the M-7 binoculars to acquire a target

it's difficult to scan an area; and the pilot gets no visual input as to what the observer sees.

Fourth is a technique we've found to be very effective although it's akin to putting the cart before the mule. In a situation where the scout sees a possible target or something out there that he can't confirm, he'll have his Cobra unmask and use the telescopic sighting unit (TSU) to zoom in on the target. Although this method can't be used in every situation, it clearly demonstrates the lack of the OH-58 to do its job—to see *for* the Cobra. Let's face it, when a Cobra has to acquire its own targets and look because the scout can't, something is wrong in the system.

The TSU, as used in the AH-1, would probably be too heavy to mount in the cockpit of an OH-58. It weighs about 176 pounds as a single unit but a reconfiguration to conform to the weight and balance loading of an OH-58 would have great tactical implications for the scout. We would be able to see farther, with better accuracy and a greater degree of security. Perhaps a similar, lighter system is the answer.

A fifth technique I didn't mention will probably be used often in combat. It is the old joke about marking the target with the "burning '58." Unless an adequate optical system is provided for the aeroscout to meet the demands of the modern battlefield, we'll be making contact on the enemies' terms. The valid mission we should perform would be negated by our inability to see.

The next area that prevents the aeroscout from being more effective is the total absence of armament. The OH-58 is essentially a combat vehicle expected to function in the battle arena with no weapons. We know that the modern battlefield is a highly lethal place where unarmed targets won't last long. The OH-58 in its present configuration cannot provide active self-protection nor can it perform an active security role for a vulnerable Cobra while the Cobra is firing.

Even if a Cobra is in a position to overwatch the scout, there will be times when having an armed scout will make the difference between the aeroscout continuing his mission or being shot down. With just about every threat weapon system from a foot Soldier with an AKM to a T-72 battle tank as a likely air defense weapon, the scout with onboard weapons can best ensure his own survival.

Too many times in training I've looked down through my chin bubble to see an infantryman pointing an M-16 at me. In that situation, we need firepower right then and there to break contact and continue our mission. The time it takes to maneuver away or go pick up a Cobra could be fatal. With my own firepower, I can best deal with what affects me and influence the situation much more effectively than as an unarmed scout.

In situations where I'm providing security for a Cobra launching its missiles, an armed scout is a must. Because the attack helicopter crew is so involved with the firing of its tube-launched, optically-tracked, wire-guided (TOW) missile, their attention is divided among several tasks, including their own security. My particular job in the unarmed role is to unmask when the Cobra does and alert him of any fire he may not see directed at him. Even with advance warning from its APR-39 RWR against radar directed threat weapons and an active infrared (IR) countermeasure in the ALQ-44 IR Jammer (on the AH-1S Fully Modernized Cobra), the Cobra is still in a dangerous position.

Let's suppose that during a multiple helicopter engagement by my unit, I spot the signature from a Swatter antitank guided missile that's fired at one of my Cobras. Now I can do two things: I can say nothing to the Cobra and hope the TOW hits its target before the Swatter hits the Cobra, or I can alert the Cobra crew about the Swatter and if they respond quickly enough they

can avoid the Swatter as well as abort their servicing of an enemy target with the TOW. What I would prefer to have happen is to be able to lay out suppressive fire on the Swatter operator by using my own weapons, thereby denying him visual acquisition and guidance. With some type of weapon, I could keep similar threats off the Cobra long enough for him to effectively fire his TOWs. This would provide a greater degree of security for the Cobra than is now offered in the scout's unarmed role.

Referring to FM 17-50 again: "If it is desirable to maintain contact with the enemy, this should be done with scout aircraft so that tank killing aircraft are not exposed to enemy fire any longer than is absolutely necessary." What this is saying basically is that aeroscouts are expected to remain in the battle area longer than anybody else. That tells me that I'm going to be exposed to enemy fire longer than any other helicopter, but I'm supposed to do that unarmed and possibly without any attack helicopter support. I like to take myself seriously, and I'm saying that to print *that* advice for the use of unarmed scouts is not being realistic.

In conclusion, there is an urgent need to fill this void in my capability as a scout. I have a valid requirement to be able to see and provide my own fire that is not met by present gear that I'll have to fight with. I believe that my job as an aeroscout is one of the most important in Army Aviation today. I sincerely hope that the impetus to bring about the changes needed *now* will not have to wait on lives being needlessly lost.

RIGHT: The author standing beside his OH-58 during a training exercise in West Germany (FRG). 1LT Buffkin is an aeroscout section leader in B Co. (Attack), 501st Avn Bn (CBT) in Ansbach, FRG

BELOW: Sometimes it is necessary to dismount the observer. Here, SGT D. Edwards, an aerial observer in the scout platoon of B Co., 501st Avn Bn (CBT), leaves his OH-58A and uses his XM-21 Stabilized Monoculars to get a better look at the enemy

BOTTOM: SGT Edwards uses the XM-21 from the cockpit of the OH-58

photo by WO1 Steven L. Hubbard

AHIP

HOW YOU GOT IT AND WHAT YOU GOT

Lieutenant Colonel
R.A. Neuwien Jr.
Assistant TSM Scout Helicopters
Fort Rucker, AL

THE ARMY JUST entered into full scale engineering development to provide you, the user, an excellent new system—the Army Helicopter Improvement Program (AHIP) aeroscout.

I can assure you that the Army has gone to great lengths to ensure the new system will meet our aeroscout needs. While there were a lot of people involved in the selection process for the AHIP, I'll put my name down high on the user's representative list for future blame if this new system does not meet our aeroscout helicopter needs.

Your probable questions at this point are: What procedures are used to acquire a new system, and what will be the capability of the AHIP aeroscout? I'll address both of these questions in order.

Materiel acquisition is the process that develops and fields systems to meet a stated user's requirement. User materiel requirements are developed after it has been determined a void in our capability to fight and win cannot be filled by changes in doctrine, organization, training or personnel. In the case of the AHIP, the need for a new aeroscout had been articulated since 1972. For various reasons, too numerous and complex to deal with in this article, the aeroscout need was not filled during the 1970s. However, progress towards this goal started when the 1978 Advanced Scout Helicopter (ASH) Study Group culminated with an Army Systems Acquisition Review Council (ASARC) in November 1979. At this review, it was determined that, although the need was great, a new development ASH was too costly and the best course of action would be to incorporate the ASH mission equipment into an existing Army helicopter.

With this guidance, the user community, led by the TRADOC System Manager (TSM) for Scout Helicopters, wrote the AHIP Required Operational Capability (ROC). (As you

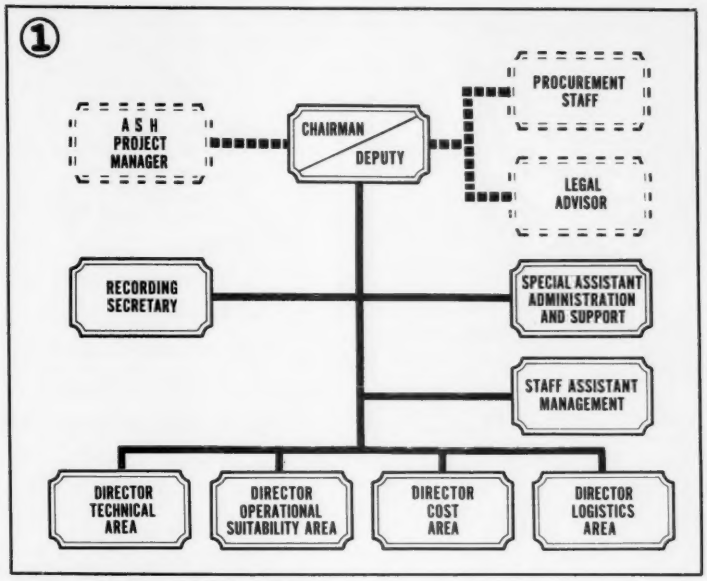


FIGURE 1: SSEB ORGANIZATION

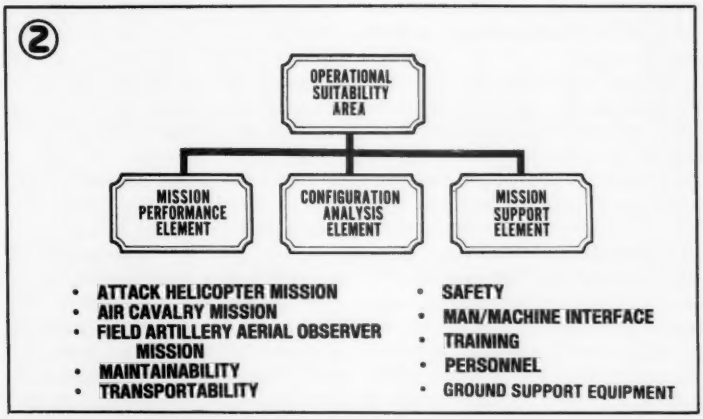


FIGURE 2: SSEB OPERATIONAL SUITABILITY

know, the ROC is the formal document that states the specific user requirement.) The AHIP ROC was used by the developer, DARCOM's AVRADCOM Program Manager (PM)—ASH, to write the AHIP Request for Proposal (RFP). The RFP translates the user's stated requirements into a document against which contractors develop their written proposals. These proposals are evaluated by a Source Selection Evaluation Board (SSEB) and they are contractually binding upon the winning contractor.

The two key factors that ensure development of a system that will meet the user's requirements are the accurate translation of the ROC into the RFP and the SSEB procedures. In the AHIP case, the close coordination and cooperation between the TSM-Scout Helicopters and PM-Advanced Scout Helicopter ensured that the RFP reflected the AHIP ROC.

The SSEB is part of the procedure used to evaluate the contractors' written proposals. (In the AHIP case, the RFP was a 3½-inch thick document and the proposals, one each for Bell Helicopter Textron (BHT) and Hughes Helicopters International (HHI), averaged more than 80 pounds per copy.) The SSEB conducted a word by word evaluation of the proposals and reported its findings to a Senior Advisory Council (SAC). The Council briefed the Source Selection Authority (SSA), who made the award decision.

The AHIP SSEB convened on 1 April 1981 and lasted for about 5 months. During this time, an in-depth evaluation was conducted of both the BHT and HHI AHIP proposals. Figure 1 depicts the structure of the AHIP SSEB.

As you can see, the Board has a chairman, deputy chairman and four areas of evaluation. Of the four areas, Operational, Technical and Logistical are "scored" areas with the Cost area being a straight evaluation and comparison of the cost for each proposed system.

My position was director of the Operational Suitability (Op Suit) Area. Figure 2 is the detailed structure of this area.

The Op Suit Area was staffed by handpicked user representatives. The proponent centers for the AHIP Aeroscout, U.S. Army Armor Center, Ft. Knox (Attack and Air Cavalry); U.S. Army Field Artillery Center, Ft. Sill Field Artillery Aerial Observer (FAAO); and U.S. Army Aviation Center, Ft. Rucker (Aviation Systems), were well represented in the Op Suit Area. The range of talent included majors with attack and cavalry backgrounds, to include authorship of the appropriate FMs; a former commander of the Aeroscout Branch, Department of Flight Training, Directorate of Training and Doctrine, U.S. Army Aviation Center;

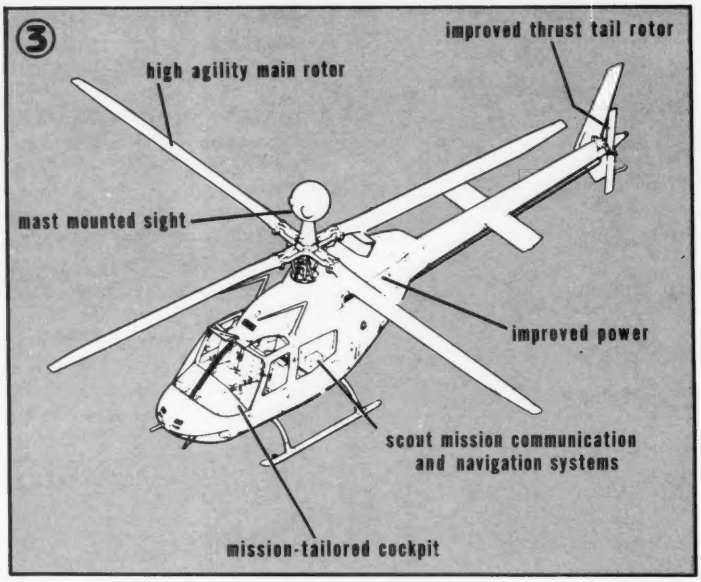


FIGURE 3: AHIP

4
- **TARGET ACQUISITION SYSTEM**
  - MAST MOUNTED SIGHT (TV, FLIR, LASER RANGEFINDER AND DESIGNATOR)
  - AUTOMATIC TARGET HAND OFF
- **ARMAMENT**
  - SPACE, WEIGHT, POWER FOR ATAS
- **SURVIVABILITY**
  - RADAR WARNING RECEIVER
  - IR SUPPRESSION AND PAINT
- **COMMO**
  - IFM, IFM/VHF, UHF, AND PROVISIONS FOR HF/SSB
- **NAVIGATION**
  - DOPPLER AND LR-80
  - VISUAL NAVIGATION DISPLAY

FIGURE 4: MISSION EQUIPMENT

5

• **VROC (FPM)**	
- 2000'/70°	650
- 4000'/95°	500
• **ENDURANCE (HRS)**	2.4
• **FORWARD FLIGHT (KTS)**	112

FIGURE 5: FLIGHT PERFORMANCE CHARACTERISTICS

training developers; combat developers; maintenance instructors; U.S. Army Forces Command air cavalry unit personnel; captains and chief warrant officers with maintenance and training backgrounds; scout and attack SIPs; and personnel with current unit experience. The AHIP SSEB used a four-step process to accomplish the evaluation. The first step was to ensure all the stated requirements were met and that the proposals were clear and complete. During this step of the evaluation, the Board communicated with the contractors through written questions, which were then answered by the contractors. The next step was fact finding sessions with the contractors and Board members sitting across the table to ask questions and provide answers. After fact finding, the contractors updated their proposals which were re-evaluated by the Board. The third step was negotiation, again across the table, to deal with the updated proposals. After negotiation (the fourth step), the contractors submitted their best and final proposals, which the Board again evaluated and used as the basis for their presentation to the SAC and for preparation of a final written report.

Time and space do not allow for an in-depth discussion of the evaluation that the Op Suit Area conducted. However, a good example is the man/machine interface factor of the configuration analysis element. The RFP required each contractor to include in his proposal a cockpit mockup. This mockup was used extensively to evaluate the man/machine interface acceptability of each proposed AHIP. Some of the things that were done included conducting "dry run" missions using various size crewmembers, wearing different degrees of flight gear to include night vision goggles, CBR equipment, "chicken" plate and arctic gloves. Based upon this part of the evaluation, both contractors made changes to their cockpit layout; and we were able to determine which cockpit configuration best met our requirements. In the Mission Performance Element, we used five areas of performance (avionics, visionics, flight and handling, survivability and armament) to evaluate the capability of each proposed AHIP to complete the attack, air cavalry and Field Artillery Aerial Observer missions. Here again, mock missions were conducted performing each of the aeroscout major functions.

The competition between the two contractors (BHT and HHI) was well fought. Both did an excellent job of presenting their proposals to the SSEB. It was determined both the BHT and HHI proposed AHIPs could accomplish the assigned missions. In the final analysis, the overall operational capabilities of the BHT AHIP were judged to be significantly superior. On 21 September 1981, the U.S. Army signed a contract with BHT for production of five AHIPs for full scale engineering development.

Now the second question—What are the capabilities of the selected AHIP aeroscout?

Figure 3 is a drawing of the AHIP. This drawing shows the major areas of improvement over the OH-58 Kiowa.

Figure 4 contains a list of the AHIP mission equipment. The

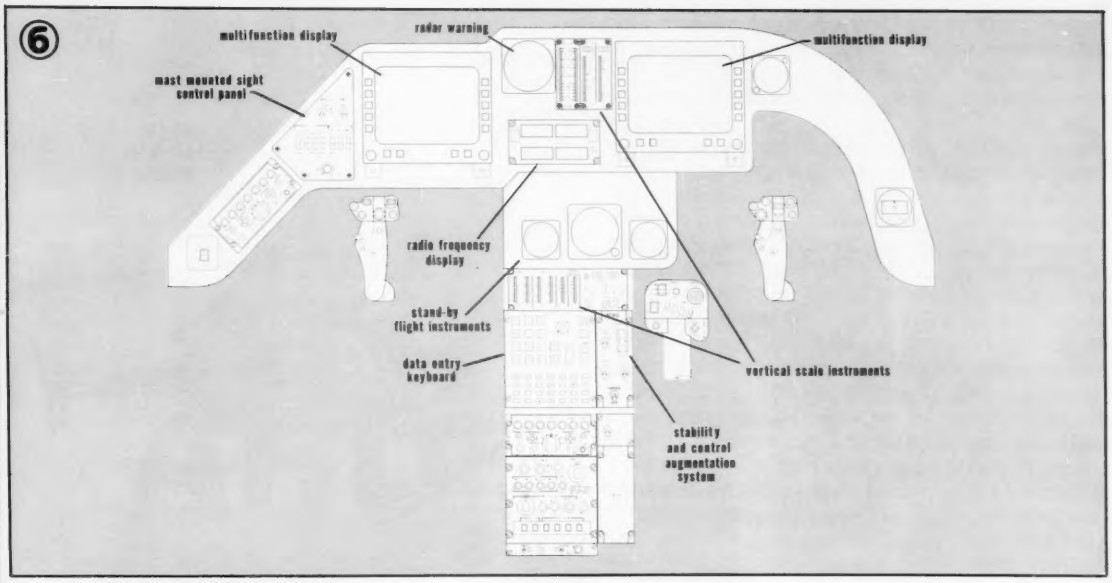


FIGURE 6: COCKPIT CONFIGURATION

acquisition, detection and designation range for the TV, FLIR and laser designator are classified, but they provide adequate standoff ranges and are compatible with AH-1S Cobra and AH-64 Apache helicopters. The automatic target handoff system provides a voice data burst message that contains all the information needed to complete a target handoff.

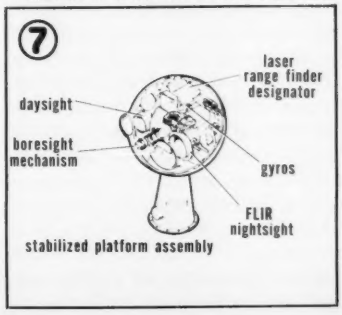
Provisions for air-to-air armament are included in the AHIP. The required space, weight and power for an air-to-air Stinger (ATAS) missile system involve the incorporation of several hardpoints on both sides of the helicopter, the missile launcher, the fire control and sighting system and two missiles. Communications are greatly enhanced by the addition of NOE specification radios. The visual navigation system is composed of a navigational doppler, an LR 80 heading reference system and a laser rangefinder. The updating of the navigational doppler is processed in the onboard dual mission computers and is presented on the multifunction displays (MFD). The data presented provides checkpoints, current location and heading and distance to the next checkpoint.

Figure 5 contains the AHIP's flight performance characteristics. Most of the numbers in this figure are self-explanatory. All are at mission gross weight of 4,016 pounds. This weight includes the space, weight and power for two air-to-air missiles and the associated fire control systems.

Figure 6 is that of the AHIP cockpit control/display system. The "guts" of this system are the two MFDs. There are four primary MFD modes. These are: TV or FLIR imagery, visual navigation display, flight parameters and communication information. In addition, emergency procedures, preformat messages and maintenance data can be called up on the MFD. Both the pilot and copilot/observer MFD have the same capabilities. Other items of interest, as shown, are: remote frequency display, vertical scale instruments, and stability and control augmentation (3 axis Stabilization Control Augmentation System). Also note on the collective head the four keys that allow hands-on radio channel changing. While not shown, other human factor improvements in the cockpit are: fore and aft adjustments of the cyclic, capability to adjust pedals farther forward than OH-58 A/C, adjustment of the right side armor seat plate for elbow-room, and outward bowing of the greenhouse for more headroom.

Figure 7 depicts the mast mounted sight (MMS) with its components. The round shape of the MMS (2' 1.5" in diameter and weighing 125+ pounds) is the best design for low radar cross section. The eyes (windows) are 32 inches above the top of the rotor hub.

FIGURE 7: MAST MOUNTED SIGHT



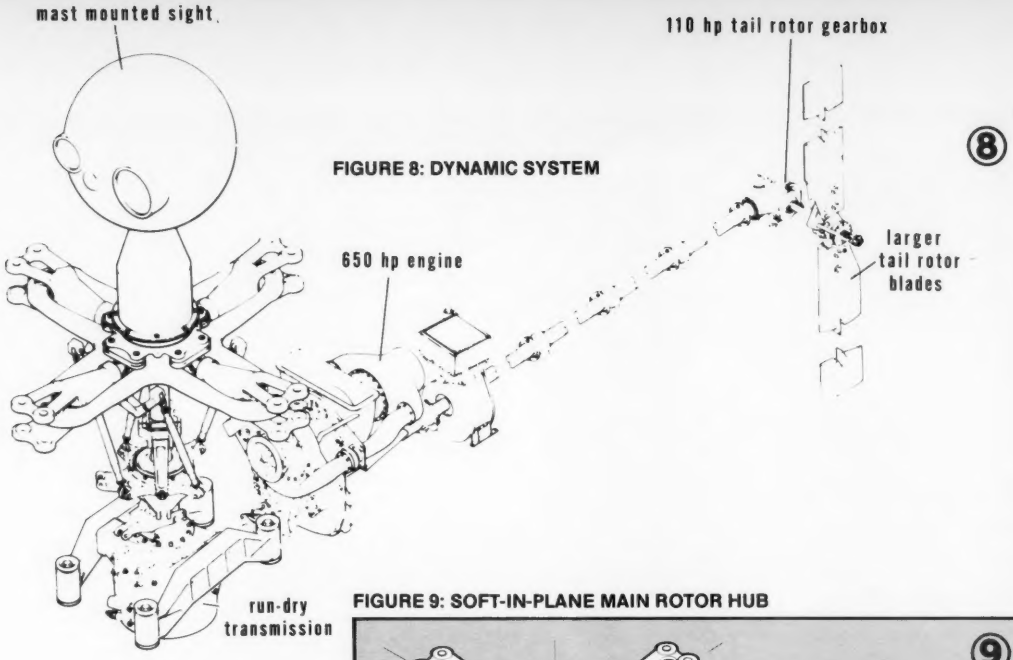


FIGURE 8: DYNAMIC SYSTEM

Figure 8 presents the dynamic system of the AHIP. In part the outstanding performance of the AHIP can be attributed to the 650 SHP engine and larger tail rotor with a 110 HP tail rotor gearbox.

Figure 9 is the soft-in-plane main rotor hub. Not only does it hold the four main rotor blades, but note the elastomeric bearing that eliminates our current OH-58 blade grips and the associated "leaking seals."

Figure 10 shows the pretwisted, tapered, composite main rotor blade. This blade is a scaled down version of the Bell 412.

Figure 11 is of the AHIP engine. Note the 650 HP output and the drive system that allows us to use this power.

This improved aeroscout reflects the absolute dedication of the developers to the requirements of the users. The evolved modifications to the OH-58 greatly improve the handling qualities of the airframe and enhance the mission capabilities of the aeroscout crew.

For the first time in the history of Army Aviation, the scout will have a "mount" that matches the riders' (scout helicopter crew's) skill, courage and imagination.

FIGURE 9: SOFT-IN-PLANE MAIN ROTOR HUB

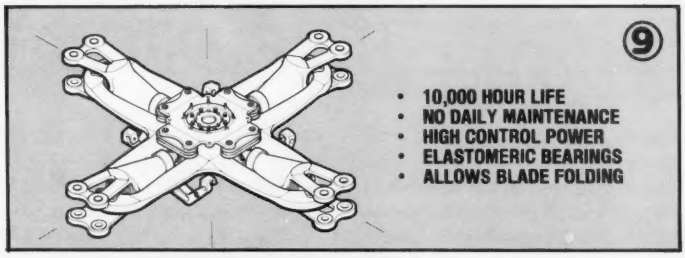


FIGURE 10: COMPOSITE MAIN ROTOR BLADE

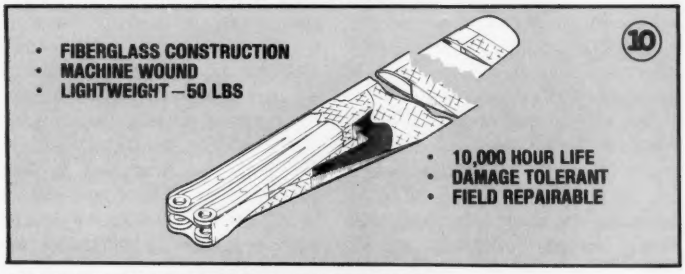
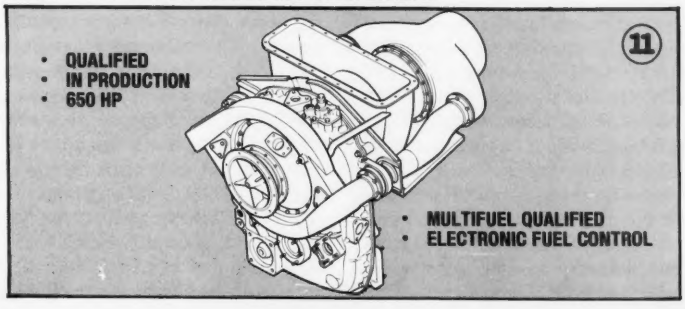


FIGURE 11: ALLISON MODEL 250-C30R ENGINE



AHIP

AEROSCOUT of the NEXT WAR

Major Laurie Pope
Assistant TSM Scout Helicopters
Fort Rucker, AL

THE WEATHER COULD have been worse, Lieutenant Blackford thought as he inched the mast mounted sight between the ice covered branches of the tree. They looked like pines, but in the dark, it was hard to tell. Using the FLIR, Teater, his observer, slowly scanned the woodline. Glancing down on his multifunction display, Blackford could see that the tree would obstruct the view to the right, so as Teater continued to scan, he got ready to reposition the helicopter.

Inching downward, he marveled at the controllability the big tail rotor and SCAS (stability control augmentation system) gave him—not squirrelly like the old A models he had flown back at Campbell. Teater pointed to a shallow depression on the side of the hill to the front. Easing into it, they debated the pedigree of the attack team leader who had pulled them out of their warm sleeping bags 2 hours ago. War was supposed to be hell, but it wasn't supposed to be this cold. They both wondered if the heaters worked in the T-72 tanks they were seeking. When the APR-9 started strobing, Blackford knew that he should have hugged the ground closer as he quickly cleared himself to the right and shifted laterally behind the hill. In this cold air, that 650 horse engine has lots of power to spare, he thought.

Pedigrees and cold now forgotten, Blackford expertly maneuvered his AHIP into the saddle on the other side of the hill. As he inched upward again until the objective area came back into the multifunction display, he quickly planned his exit in case the APR-39 started singing again. There they were—one, two, three T-72s—but no sign of the ZSU. Mentally relating the target location to the AH-64s waiting eagerly in the firing position, Teater ranged the first T-72 with the laser, released the range and azimuth to the computer, and with several nimble strokes completed the target handoff message and sent it to CW3 Jensen in the AH-64. While waiting for Jensen to respond, Blackford notified the team leader they had contact. Patterson, in the other AH-64 and slavering for his first kill, monitored the target handoff message and was viewing the target area through his TADS. Spying the ZSU, he told Blackford that he had a clear shot at the ZSU and could kill it autonomously. Blackford okayed that as Jensen's message to "Sparkle" came back to Teater. Aligning the crosshairs on the tank, Teater switched the mast mounted sight into autotrack and punched the laser designator. Seconds later he observed the HELLFIRE's impact and watched the bright orange ball of flame violently throw the turret from the T-72. "They don't need their heater now," Teater chuckled, as Blackford eased his AHIP into another position, his gut telling him that Patterson, panting for blood, was going to get his fool self killed.

This scenario is not the pipe dream it was a few years ago. In fact, after long recognizing the need for an improved aeroscout, the Army has entered a contract with Bell Helicopter-Textron to produce an aeroscout that is capable of doing what was described in the scenario—and more.

The Army Helicopter Improvement Program (AHIP) will provide the Army with an aeroscout that is capable of providing timely detailed reconnaissance, battlefield information, command, control and firepower management to commanders. Equipped with modern mission equipment, it is emerging as a lethal weapons system that will integrate firepower and mobility to contribute decisively to the outcome of the next war.

The AHIP aeroscout will fight in three organizations: attack helicopter companies, air cavalry troops and division aviation companies.

The attack helicopter company fights in teams (figure 1), usually with a mix of three scouts and five attacks. The team leader in the attack team operates from the AHIP aeroscout. He is responsible for the operational employment of the team. He assigns fight-

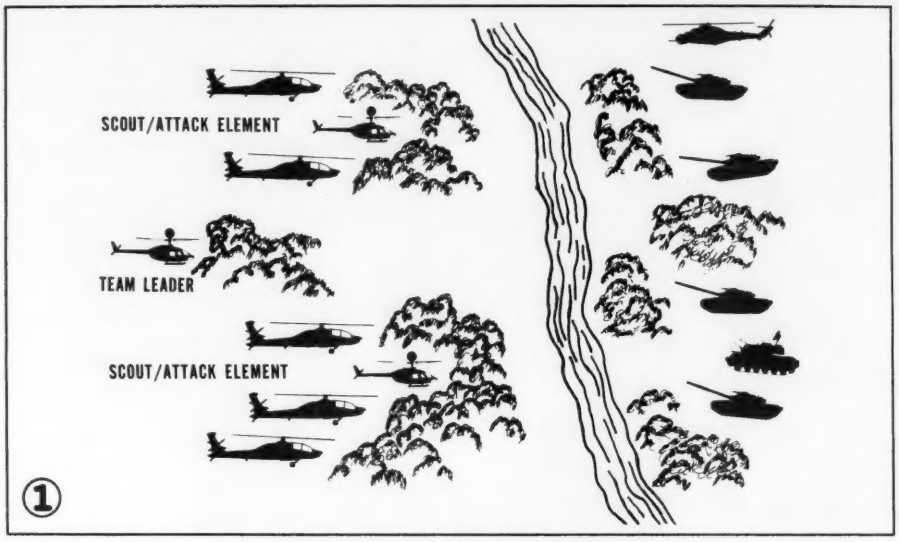


FIGURE 1: ATTACK HELICOPTER TEAM

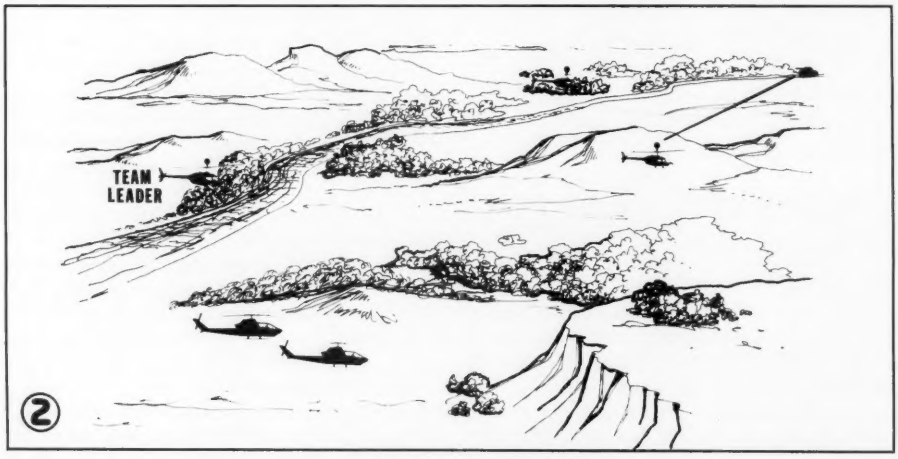


FIGURE 2: AIR CAVALRY TEAM

ing positions, target arrays or sectors to the elements of the team.

The team leader coordinates with ground elements, artillery and Air Force assets as necessary, leaving the attack element AHIPs free to locate, acquire and laser designate targets for attack helicopters. The AHIPs do this by viewing the battle area through their mast mounted sights, identifying targets, transferring the target information to the attack helicopters and then laser designating the target for engagement by HELLFIRE.

This procedure allows the attack helicopter to unmask only long enough to fire the missile, thereby increasing the probability of its survival. Each of the AHIP aeroscouts when equipped with an air-to-air weapons system can provide mutual protection against Hind helicopters and other aerial threats.

Employment of the air cavalry teams (figure 2) differs somewhat from attack helicopter team employment. The focus of air cavalry is on conducting reconnaissance and gathering battlefield information. Air cavalry teams are composed of scout/attack helicopter

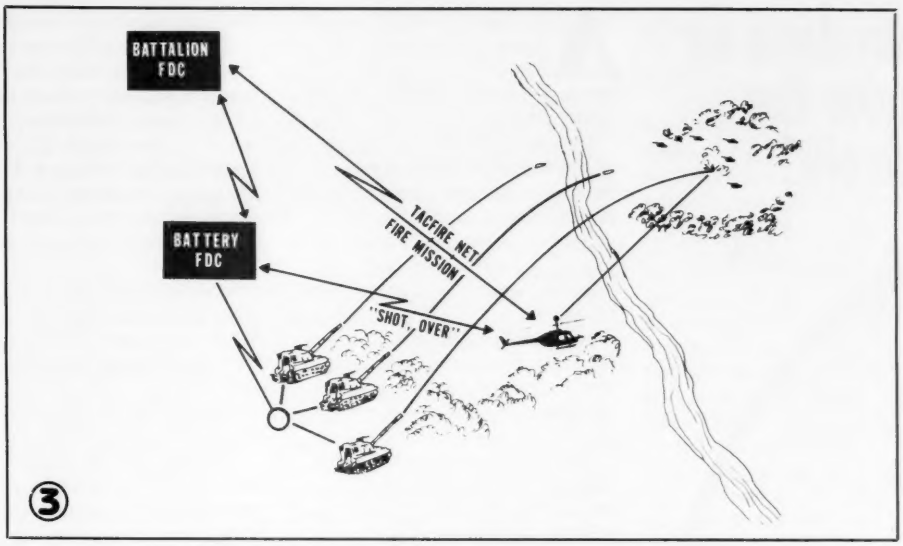


FIGURE 3: FIELD ARTILLERY AERIAL OBSERVER EMPLOYMENT

mixes that the commander feels are dictated by the mission, enemy, terrain and available assets.

Attack helicopters in the team are there to protect the scouts and provide a source of limited firepower. Each AHIP aeroscout can laser designate for HELLFIRE or COPPERHEAD and adjust close air support.

The third primary role for the AHIP is to serve as a Field Artillery Aerial Observer (FAAO) platform (figure 3). The FAAO AHIPs in the division aviation company also use their mast mounted sensors to acquire targets at standoff distances. They employ nap-of-the-earth (NOE) techniques similar to those used by scouts in attack helicopter companies and air cavalry troops. The FAAO adjusts conventional artillery essentially the same way as any artillery observer does. He enters the TACFIRE net using the Automatic Target Handoff System that is part of the mission equipment package of the AHIP. COPPERHEAD engagements require the FAAO to laser designate for the COPPERHEAD projectiles. He does this by acquiring the target through his mast mounted sight and placing the laser spot on the target within the COPPERHEAD seeker's footprints. If multiple targets exist, the FAAO shifts the laser spot after the first impact, guiding successive rounds to specific targets within the area.

The small size of the AHIP, the ability to use the mast mounted sight while hiding behind cover and concealment and the continuous employment of NOE tactics make the AHIP difficult to detect. The infrared suppressors and radar warning receiver provide further protection, as does the agility provided by the larger engine and transmission. Improved radios and digital data transmission capability will greatly improve the battlefield information flow. With the navigational Doppler, the AHIP crew is able to accurately locate itself and whatever it observes.

The AHIP aeroscout fills the void existing in the Army scout capability. It incorporates new technology into an already existing airframe, dramatically increasing the mission capability while reducing crew workload. It comes at an affordable cost and will be available years before a new development aircraft would enter the battle. But most importantly, it provides the Army scout crew a machine that matches its skill and will enable it not only to survive, but to win!

When does an IP take the controls?

U.S. ARMY SAFETY CENTER

ACCIDENT FILES include many cases where IPs have allowed students to go too far before taking control of the aircraft.

Here's a problem that no doubt comes up many times daily in every unit. Our psychologists tell us that mere recognition of a problem is the most powerful factor in its ultimate removal. To attempt an all-out assault on the problem here would be difficult, to say the least, but perhaps we would benefit by merely bringing it into the open and conducting a general discussion.

The feeling held by most IPs seems to be that while the student has the controls, the less yakking and riding of the controls by the instructor, the better. This idea is good in its basic concept, but to be effective it must be applied in specific cases rather than on a general level. General application to all students is apt to make the instructor a slave to the idea, so that when he should take the controls away from the student in a tight situation his reaction is not fast enough.

This hesitancy to assume control of the aircraft by the instructor could well be a result of experiences which most student pilots had in flight training. The instructor who was always on the controls and always talking was to be shunned like the plague, and few if any students ever went through the flight program without running into one of these characters. The student who has had such experiences is very likely to go to the other extreme when he finds himself in the position of instructor.

This seems to be true of most new IPs. With time and experience they soon learn the ropes and develop a more realistic attitude. So it is with the new instructor that this problem seems to prevail. By new instructor we don't necessarily mean "junior." Many of the senior officers, upon finding themselves in the position of instructor for the first time or after a long absence from instructing, are just as prone to this reaction as the

The problem with IPs

NO ONE CAN argue about the importance of the IP's role in Army aviation.

Not only is he knowledgeable, experienced, and proficient in matters related to flight, but he is also skilled in imparting this knowledge to others. And he didn't gain this knowledge and experience overnight. It required a lot of time and effort. Once he has made the grade, the bulk of the responsibility for safe and efficient training of other pilots seems to be dumped into his lap. In the process, it is sometimes forgotten that instructing pilots is vastly different from other teaching assignments.

A student in college, for example, may fail every exam and eventually "wash out" of the

junior officer pilots.

As a general rule, it is safe to say that whenever there is doubt in the instructor's mind as to the safety of a particular phase of a maneuver he should assume control of the aircraft. Now this statement may sound ridiculous to some because it sounds so trite and obvious. But the sad, well-documented fact is that not enough instructors believe it. There seems to be sort of a hypnotic effect on some instructors when confronted with a tight situation. Search your memory, you IPs, and see if you can't recall similar hypnotic spells on your part where if you had it to do over again there wouldn't be any hesitation. Then there are those occasions where you knew darn well it was going to be close but you just couldn't bring yourself to take over. You decided on the spur of the moment to chance it—to bull your way through. It's sort of the same kind of mixed-up thinking that many pilots use when they decide to try to salvage a lousy landing. It's just mixed-up thinking and in many cases an out-and-out case of inability to make a fast decision.

The real trick of course is to be able to anticipate rough situations just moments away and then take over. There should be no excuse whatever for an IP allowing events to take their natural course when there is the slightest doubt in his mind as to the outcome of the maneuver.

In an autorotation, for instance, if there are trees between the point where the throttle is cut and the intended recovery spot, an instructor should be able to tell as soon as a descent is established whether or not the student is going to be close to the trees. If it is going to be close the instructor should either tell him to go around or take over himself. There is no excuse in this world to allow the autorotation to continue if there is any doubt at all about proximity to the trees. Yet this continues to happen almost daily. Ask any IP if this isn't true. Along these lines a student should initiate his own go-around if things aren't right. He has a responsibility here as well as the IP.

In many flight situations when the student isn't performing the maneuver just right, the instructor can afford to let him keep the controls and learn for himself. The good instructor should learn to distinguish between these situations and give the student as much leeway as is consistent with safety of the aircraft. There is no better way to learn than to get fouled up and get yourself unfouled by your own efforts. But wrecking an aircraft isn't in this category, and if the instructor is worth his salt he won't allow a student to get into such a mess.

It hurts a man's pride to have the controls taken away from him just when he thinks he has it wired, but the responsibility that goes with signing for an aircraft that costs several hundred thousand isn't small. Instructor and student alike should realize this, and the instructor should be given the benefit of the doubt when he acts accordingly.

course—and the college. But he doesn't take the classroom or the building in which it is located with him when he leaves. Nor does his departure have any physical effect upon the instructor or the remaining students. This is not the case with flight training. One small student error at an inopportune moment in flight can literally "wash out" the aircraft along with the student, the IP, and any other occupants who may happen to be on board.

Similarly, a college professor may inadvertently make an error while solving some mathematical problem and no real harm is done. He simply locates the error and makes corrections. The IP, however, does not enjoy the same kind of luxury. Any error on his part can produce results that might range from mild to catastrophic. Yet, the IP is just as human and just as prone to making an inadvertent error as is the college professor.

Basically, the issue is how can the IP prevent an emergency situation—and a possible mishap—from developing as a result of a student error, and how can he avoid making mistakes of his own?

IP overconfidence in SPs

Late corrective action by the IP is almost always a factor when mishaps occur because of some improper action on the part of the SP. In the majority of these cases, the delay was the result of overconfidence in the SP's abilities. Such overconfidence in another's ability has caused many an IP to relax his guard and permit a situation to develop beyond his ability to control it.

To accomplish his job, the IP must allow the SP to go as far into a particular maneuver as possible before assuming control of the aircraft. If he takes over too

early, the student fails to gain the necessary experience. If he waits too long, a mishap results. Add to this any sudden, unpredictable control inputs an SP might make at some critical point in a maneuver, and the possibility of the IP preventing a mishap further decreases. What, then, can be done to reduce the risk of training mishaps?

The commander's responsibility

First, commanders should insure each IP is properly qualified and proficient in the area of training in which he is to engage. Then, commanders should make certain IPs are in good health both physically and emotionally. Next, insist that during transition training the IP demonstrate a maneuver before having the SP attempt it—regardless of the experience level of the SP.

Make sure aircraft are properly serviced and maintained so that no mechanical problems are added to the IP's concern. Finally, provide the best supervision possible to insure regulations and SOPs are followed and to discourage the performance of any unauthorized maneuvers. From this point, responsibility for the safe conduct of training flights rests primarily with the IPs themselves.

The IP's responsibility

It is the IP's responsibility to insure he is proficient in his area of training responsibility, and that he is physically and emotionally capable of performing his duties. After all, no one is better qualified to provide this information than the IP himself. And while he must be confident in his abilities, he must guard against any tendency towards overconfidence. Simply stated, the IP must remain aware of his capabilities and not exceed them.

Similarly, the IP must guard against developing excessive confidence in the abilities of a student pilot undergoing training. On the contrary, he should expect the unexpected and be prepared to take corrective action.

Further, the IP should make sure he is aware of any potential hazards that may exist and remain observent for any additional ones that might possibly arise during flight. He must constantly monitor the SP and remain close to the controls when the SP is performing any critical maneuvers. And it goes without saying that he should not allow himself to be swayed into demonstrating any unauthorized maneuver. In a nutshell, he is to obey all regulations and SOPs related to his mission.

Finally, he must rely on his best judgment as to when he should assume control of the aircraft. This is one area of operation that cannot be dictated or covered by rules. The IP must depend on his knowledge, training, and experience to guide him as to when he must make the decision to "take over."

Yes, the IP is an important member of the Army aviation team. As a matter of fact, he is invaluable—indispensable. But he is also human. As such, he is not infallible. Commanders must never treat him as if he were by demanding more of him than can be reasonably expected. And what is even more important, the IP must always remain aware of his fallibility. Knowing that he can make mistakes is his best defense against making them.

REPORTING FINAL

Late News From Army Aviation Activities

FROM WASHINGTON

New for Warrant Officers. "Aircraft Armament Maintenance Technician—4D-SQIE" is the title of a new course now being taught at the Army Transportation School, Ft. Eustis, VA. It is for active duty aviation warrant officers who are qualified in MOS 100EO and 160AO and who will be assigned as aircraft maintenance technicians upon graduation.

More than 440 hours of academic instruction on weapon systems and subsystems are given in the 12-week, 3-day course. Its graduates are awarded SQI "E" in both MOSs and incur a 12-month service obligation.

Each class will be limited to nine persons, and the next starting date is 16 April. Training officers can receive quota and schedule information from MILPERCEN's Aviation Programs Branch (SGM Merritt), AUTOVON 221-8156. **(DAPC-OPA-V)**

Army Aviator Is JCS Chairman Nominee. General John W. Vessey Jr. has been nominated by President Reagan to be the next chairman of the Joint Chiefs of Staff. He has been the Army's vice chief of staff since July 1979.

The four-star general, the only Army aviator ever named for this position, is scheduled to succeed retiring JCS chairman Air Force General David C. Jones 30 June.

General Vessey was a first sergeant when he received a battlefield commission for his actions at Anzio Beachhead, Italy, in 1944; so the 59-year-old general now has over 37 years' active commissioned service. **(ARNEWS 221)**

FROM FORT RUCKER

Graduation Speakers.

• Major General Patrick M. Roddy, director of program analysis and evaluation, Office of the Army Chief of Staff, Washington, DC, told members of graduating flight classes that the Army's ability to attract sufficient numbers of qualified recruits under its volunteer concept at a cost the nation can afford is "fast becoming a social and political problem of major proportions." He advised the newly rated helicopter pilots, including his daughter, 2LT Leslie M. Roddy, that their responsibility, as future leaders of the Army, is to be informed about the issues involved.

5,000 Chinook Hours. CW4 Mack Maclaren, left, accepts an award for the 5,000 accident-free hours he has flown in a CH-47 Chinook helicopter, including 2,812 combat hours. Major Robert Taylor, commander, 242d Aviation Company, Ft. Wainwright, AK, presented the specially designed plaque from Boeing Vertol, manufacturer of the Chinook. CWO Maclaren, a standardization instructor pilot for the 242d, graduated from flight school in 1967 and from CH-47 transition training in 1968 at Ft. Rucker, AL.

REPORTING FINAL

Late News From Army Aviation Activities

• Major General James N. Ellis, division engineer of the South Atlantic Division, Army Corps of Engineers, Atlanta, GA, advised 59 graduating Army aviators that their training "is aimed at one purpose, success on the battlefield." To attain

Hail and Farewell . Colonel Robert A. Bonifacio, left, is the outgoing president of the Army Aviation Board, Ft. Rucker, AL, and his successor is Colonel Robert A. Wagg, right. The change of command, as well as COL Bonifacio's retirement, occurred in January. One of 10 TRADOC boards and test activities established for operational testing, the Aviation Board is involved in the test and evaluation of aircraft, armament, electronics and related aviation equipment from the user's point of view.

Command Visit . Brigadier General L.J. Riley, center, commanding general, 7th Signal Command and Ft. Ritchie, MD, receives information on the air traffic control operations at Hooper Stagefield, Ft. Rucker, AL, from SFC Ronald J. Stayrook, facility chief. At right is SP5 Noel W. Taylor, ATC tower operator. The general was visiting the Army Communications Command at Ft. Rucker.

photo by SP4 Denise Starr

that success, a professional Soldier must be characterized by commitment, confidence, candor and courage, he said. **(USAAVNC PAO)**

FROM FORT BRAGG

Safety Awards. Six aviation units earned the post aviation safety award for accident-free flying in 1981.

Lieutenant General Jack Mackmull, commanding general, XVIII Airborne Corps and Ft. Bragg, presented the plaques recently to representatives of: Headquarters and Headquarters Company, Army Garrison; 517th Transportation Company; A, C and F Companies, 82d Aviation Battalion; and B Troop, 1st Squadron, 17th Cavalry.

The 1st Squadron, 17th Cavalry, 82d Airborne Division, also received the FORSCOM Commander's Trophy for the best aviation safety record throughout FORSCOM for the second year in a row. **(VEITH, PAO)**

FROM MOFFETT FIELD

Contracts Awarded by Army Research and Technology Laboratories.

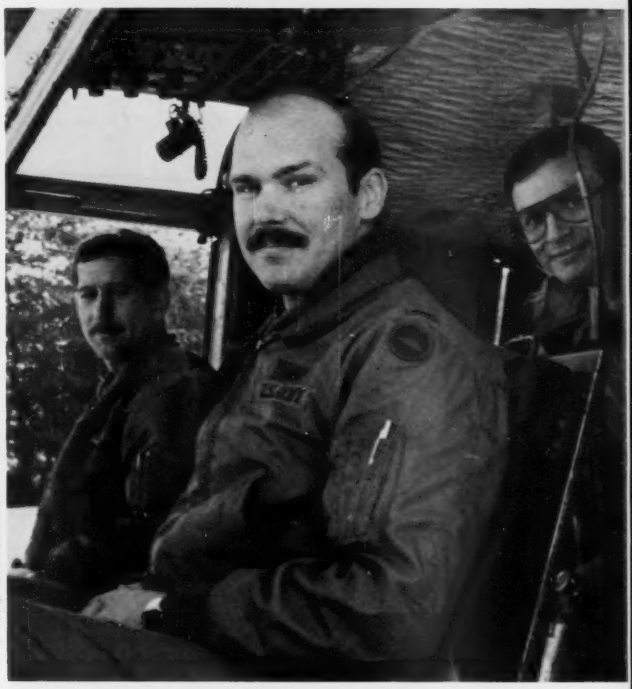
• Sikorsky Aircraft Division, United Technologies, has received a 3-year, $6,413,000 contract to develop and demonstrate the manufacturing technology for making a totally composite main rotor blade for the UH-60 Black Hawk helicopter at a much lower cost than the current blade with metallic spar. The contractor will seek equal or improved fatigue life, bullet damage tolerance and radar cross section.

• Hughes Helicopter will develop two experimental systems that provide the Army's attack helicopters with the ability to spot and engage both stationary and moving targets in adverse weather and battlefield conditions that preclude use of elctro-optical systems. The 48-month, $3,784,550 contract is called the pod-mounted Helicopter Adverse Weather Fire Control-Acquisition Radar (HAWFCAR) system. **(RTL PAO)**

FROM FLORIDA

Conference Date. The fourth Interservice/Industry Training Equipment Conference and Exhibition will be held 16 to 18 November at the Hyatt House near Orlando. The conference provides a forum for the exchange of information on the latest technology plus management and topics of interest to the users of training equipment.

(IITEC)



photographs by SP4 Lisa Mena

LIFESAVERS IN JAPAN. Operating as the only emergency medical evacuation unit in the Kanto Plain, Japan's greatest lowland which spreads east from the mountains of central Honshu to the Pacific and on which stands Tokyo, is a primary mission of the U.S. Army Aviation Detachment at Camp Zama. Minutes are precious in a lifesaving situation, and detachment members pride themselves on being able to quickly answer any medical emergency 24 hours a day, 7 days a week. Four of the people who help provide this service are (above) crewchief Sergeant Ronald Hand and (below) pilots Chief Warrant Officers, CW3, Raymond H. Christ, left, and Anthony Marbois, center; and medic Staff Sergeant Osmundo Hurtado, right.

PEARL'S

Personal Equipment And Rescue/survival Lowdown

Carol Stein
photo by Reid Rogers

Another ELT Save

On 24 December 1981, a party of five persons departed Texas in a single engine civilian aircraft bound for Colorado ski country. Due to a series of mistakes on the part of the aircraft's pilot, this flight was to end in tragedy. However, as you will see, things could have turned out much worse for all concerned if it had not been for the presence of an emergency locator transmitter (ELT) onboard. The pilot's first mistake on this ill-fated flight was neglecting to file a flight plan. This fact alone would cause many of us to question his judgment and flight experience.

The second mistake the pilot made was flying into a region of high mountains in the middle of winter. Even the most experienced pilots are extremely cautious about facing the many hazards associated with winter mountain flying, including high altitude, ice, fog and the gale force downdrafts which are especially prevalent on the eastern slopes of the Rockies. Some of these mountain downdrafts have been estimated at

more than 300 miles per hour, and many inexperienced pilots have found themselves and their aircraft suddenly meeting the ground with little or no warning. And, of course, the high altitude required does nothing to add to the performance of a piston type aircraft engine.

But back to the particular flight in question. For reasons as yet unknown, the aircraft crashed in snowy, mountainous terrain. Apparently there were no serious injuries to those onboard. At this point the pilot made his third and final (and fatal) mistake. Shortly after the crash he left the aircraft in search of assistance, in spite of the fact that most pilots have been taught to stay with their aircraft until reasonably sure that rescue was not forthcoming. He has not been heard from since.

Three days later—on 27 December—another aircraft flying in the area detected a weak emergency signal from the downed aircraft's ELT. A search of the area was initiated after the signal location was confirmed. Army helicopter crews assisted in guiding foot patrol searchers to the area of the signal, where they found four frostbitten survivors huddled in the wreckage of the single engine aircraft. The four were airlifted to safety.

This is but one case of many where the ELT was directly responsible for the location of a downed aircraft and the subsequent successful rescue of the survivors. (Ed Daughety, DARCOM Project Office for ALSE)

First Aid Kit Inspection

Many questions have arisen regarding who is responsible for the inspection of the first aid kits contained in the survival vests and survival kits used by Army aircrews. Paragraph 10-7 of TM 55-1500-328-25, "Aeronautical Equipment Maintenance Management Policies and Procedures," clearly identifies medical personnel as responsible for the inspection of *aircraft* first aid kits. However, no publication specifies who is to inspect the first aid kits in aircrew vests and survival kits. TM 55-1680-317-23&P, "Organizational and DS Maintenance for Army Aircraft Survival Kits," states simply that "qualified" personnel are responsible for preventive maintenance checks and services on all survival kits. Currently, within the Army, only medical personnel are considered "qualified" personnel for the purpose of first aid kit inspections. The Army has few aviation life support equipment (ALSE) personnel who are trained to perform the required inspections. It is the position of this office that, where feasible, medical personnel should perform the inspections on those first aid kits contained in survival kits and vests; however, in the absence of medical personnel, the inspections of those kits may be accomplished by trained, designated ALSE personnel. Point of contact (POC) at this office is Mr. A.B.C. Davis Jr., AUTOVON 693-3307.

Long-Acting Nasal Sprays

Recent ALSE inspections have revealed that a number of aircrew personnel are keeping bottles of long-acting nasal sprays in their survival vests and first aid kits. Personnel in the office of The Surgeon General confirm that long-acting nasal sprays are extremely powerful and that frequent usage of this medication may result in the temporary grounding of flight personnel. These sprays are administered on a case-by-case individual basis and should be used with great discretion, and only when recommended by authorized medical personnel.

Basis Of Issue For First Aid Kits

Some confusion exists pertaining to the number of first aid kits, general purpose, panel mounted, national stock number (NSN) 6545-00-919-6650, required for the UH-1 Huey helicopter. This is due to an apparent conflict in publications concerning this item. AR 95-1, "Army Aviation: General Provisions and Flight Regulations," refers you to "the appropriate aircraft operator's manual." TM 55-1520-210-10, "Operator's Manual: Army Models UH-1D/H and EH-1 Helicopters," states that four of the subject first aid kits are provided in each aircraft. However, TM 55-1500-328-25, "Organizational, Direct Support, and General Support Maintenance Manual: Aeronautical Equipment Maintenance Management Policies and Procedures," states that first aid kits will be installed in the quantities specified in CTA 8-100. Finally, CTA 8-100, "Army Medical Department Expendable Supplies," specifies one first aid kit "per crew compartment in Army aircraft; five passenger seats/capacity or fraction thereof." In an attempt to eliminate the confusion, this office, in conjunction with the U.S. Army Safety Center (USASC), Ft. Rucker, AL, is attempting to change AR 95-1 and all aircraft dash 10s to require the number of first aid kits specified in CTA 8-100. POC at this office is Mr. Ed Daughety, AUTOVON 693-3307.

PEARL'S

Helicopter Oxygen System

Many Army Aviation units are required to fly in mountainous and other high altitude areas where the use of oxygen equipment is absolutely necessary. Currently, these units have two oxygen systems available to them through the Army supply system. The first system available is the oxygen system: in-flight portable, NSN 1660-00-148-9218. This item is listed under line item number (LIN) N40820 in Chapter 8 of SB 700-20, and is designed for use in the UH-1 and other helicopters. This system may be easily transferred from aircraft to aircraft and provides adequate oxygen for complete aircrews while in flight. The second system available is the regulator unit, oxygen system: walk-around, NSN 1660-00-700-9776. This item is listed under LIN R67841 in Chapter 8 of SB 700-20, and can be used with almost any aircraft in the Army inventory. This system can be carried by the individual aircrewmember both onboard while in flight and off the aircraft when engaged in high altitude operations, such as rescue. Although some aviation units are using approved commercial-type, locally procured, oxygen systems, the two listed above are the only ones available through regular Army supply channels. POC at this office is Mr. Rainy Bell, AUTOVON 693-3307.

Send 'Em In!

In order for you to ensure your survival in an emergency situation, you must be sure that your ALSE is the best that the Army can possibly supply to you. And in order for you to ensure that this ALSE *is* the best, you must be sure to report any deficiencies in the quality of the equipment provided to you. Unless you, the user, provide timely and accurate information on equipment problems, the agencies which procure and manage this equipment will not be aware of these problems and consequently will not be able to take corrective actions. You must be sure to submit quality deficiency reports (QDRs) on Standard Form 368 to the appropriate agency. Similarly, if you feel that an item of equipment is not performing its function properly, or if you think an item can be improved, be sure to submit an equipment improvement recommendation (EIR), also using Standard Form 368, to the appropriate agency. Remember, QDRs and EIRs don't work unless *you* send 'em in!

That "Other" First Aid Kit

It has come to our attention that some units in the field are substituting the survival kit, individual, NSN 6545-00-139-3671, for the survival kit, individual, tropical, NSN 6545-00-782-6412, in the SRU-21/P survival vest. According to personnel in the Directorate of Medical Materiel, Defense Personnel Support Center (DPSC), Philadelphia, the two first aid kits are *not* interchangeable. The kit being substituted is intended to be issued to personnel—other than aircrews—who may become stranded in isolated areas. This kit does not contain certain items deemed necessary for aviation personnel, such as a compass, antidiarrhea tablets and iodine. Only NSN 6545-00-782-6412 should be used in the SRU-21/P survival vest. POC for further information is LTC Olander, Directorate of Medical Materiel, DPSC, AUTOVON 343-7107.

Questions and Answers

We have recently been informed that the AN/PRM-32 and AN/PRM-32A radio test sets, which we use to test our AN/PRC-90 radios, no longer require calibration. Is this true? If so, where has this information been published? (SSG Michael E. Buckley, 5th Aviation Battalion, Fort Polk, LA)

The information you received is quite true. The U.S. Army Communications-Electronics Command (CECOM) has confirmed that the calibration requirements for both the AN/PRM-32 and the AN/PRM-32A radio test sets (NSNs 6625-00-803-3399 and 6625-01-013-9900, respectively) have been deleted. This action was taken due primarily to the fact that the Air Force, which manages both items, requires no calibration on them. Information to this effect was published on page 47 of the October 1981 edition of *PS* magazine (issue number 327) and will be reflected in the next issue of TB 43-180-1. POC at CECOM for further information is Mr. Art Rose, AUTOVON 992-2332.

If you have a question about personal equipment or rescue/survival gear, write PEARL, DARCOM, ATTN: DRCPO-ALSE, 4300 Goodfellow Blvd., St. Louis, MO 63120 or call AUTOVON 693-3307 or Commercial 314-263-3307

1981 Subject-Area Index of *Digest* articles. Remove and keep as reference guide.

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CW3 Robert E. Browning
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The Unit Threat Officer

WITH THE INCREASING complexities of the modern battlefield a large majority of aviation unit commanders have found it necessary to establish the extra duty of unit threat officer.

While it is widely known that each officer contributes to the successful accomplishment of the unit's mission by the efficient management of his or her extra duty, no one has the potential for offering a greater contribution than that of the unit threat officer.

As it becomes more and more widely recognized, threat training is affecting every aspect of unit training. The unit threat officer is therefore becoming a more prominent factor in the successful accomplishment of the unit's mission.

With the growing importance of this position, selection of the individual by the unit commander is critical. It would be ideal if every aviation unit had a rated, school-trained military intelligence officer assigned as the unit threat officer. While this is the ideal situation it is far from the realistic one. This duty, therefore, falls usually to the aviation warrant officer; this extra duty is ideal for the aviation warrants. It is totally relevant to his primary specialty and, when approached with enthusiasm, will constantly sharpen his skills in employment of the aircraft as a total weapon system. A bold and imaginative threat training program will increase unit effectiveness. The unit commander can further increase the return on the investment by allowing the threat officer to attend one of the many schools which are available from the various services.

With the threat scenario constantly changing, an Armywide program might be the best approach. This could lead to an additional skill identifier which would allow the individual to be properly identified in much the same manner as a safety officer. Whereas each unit has an authorized position for a safety officer, it also could have a position for a threat officer. While this discussion of the possible creation of another skill identifier and special handling of additional personnel may seem unnecessary, let me remind you that *threat* is the foremost driving factor of unit training. It is foolish to train for a threat that does not exist. It is equally foolish to train for the wrong threat. In addition to the aforementioned reasons, it will help to standardize threat training throughout the Army and, as an added benefit, will be career enhancing to the aviation warrant officer. This individual who has long been accepted as the professional aviator will be afforded the opportunity to advance and increase his contribution to the accomplishment of the unit's mission.

At this point, you may be wondering where the battalion S-2 would fit into this plan. The battalion S-2 remains the center of the intelligence effort. As a trained expert he will direct the overall intelligence program to ensure the smooth integration with the battalion's mission. To ensure proper support to all units in the battalion, the S-2s must necessarily be concerned with many areas and cannot devote their entire effort toward one unit. Also, with the dramatic speed of the advance of technology no one person can keep abreast of all the changes of the different weapon systems. It is in this area that the aviation warrant officer, acting as the unit threat officer, can be most effective. The unit threat officer, through proper coordination with the S-2, can concentrate on those threats which are perceived to be of the greatest interest to the unit. This type of area concentration will lead to a well established base from which to draw. The S-2 can rely on each unit's threat officer to provide him with in-depth, up-to-date information on a specific threat. This would allow the S-2 to manage from a staff level the overall intelligence program. The unit threat officer will be able to provide unit members with up-to-date information directed specifically at their unit and its mission, thereby efficiently utilizing the unit's valuable training time. The unit threat officer will be able to recognize potential threats because of personal detailed knowledge of the unit's mission and capabilities. The unit threat officer could then advise the unit commander as to the impact of each threat on the unit's ability to perform its mission. The unit commander then decides on the best approach to ensure the ability of the unit to support the overall mission of the battalion.

Now that these thoughts have been put forth, it is up to the aviation unit commanders to use their aviation warrant officers in an area which will benefit both. Remember, you have depended on their advice in the past; why not expand their usefulness and reap the harvest for the future?

JOINT ARMY, NAVY AND MARINE CORPS INTER-SERVICE MISSION AND EQUIPMENT TRAINING IN AN AMPHIBIOUS/MOUT ENVIRONMENT

What It's All About

Captain Ronald B. Brown
Assistant Division Aviation Officer
7th Infantry Division
Fort Ord, CA

IN 1959, THE Army Aviation School's Combat Developments Office completed a study organizing the development objectives for Army Aviation through 1970. The future growth in the organization of Army Aviation and its proposed airmobility concepts and doctrine were outlined. Vietnam had extended a great deal of knowledge and experience to the consideration of that doctrine and would continue to present formidable challenges to concepts and equipment being used by the ground commander and major designers/builders of our next generation aircraft.

As the Vietnam conflict intensified, operations involving interservice participation presented even greater challenges to the ground force commander involving an array of problem areas seldom before experienced. Terminology was often a stumbling block in the interpretation of a "frag order" or specific support roles. Differences in equipment often left the task force commander with the burden of a reeducation process in order to fully benefit the ground commander with the appropriate support and firepower needed to optimize battle plans. Tactics used by the various interservice elements needed consolidation and standardization in order to bring together a cohesion of all elements concerned.

The lessons learned were invaluable as well as the comradery experienced by each participant whether officer, noncommissioned officer or enlisted.

One of the primary lessons learned was that of continued liaison and joint training by all of the service branches; this can at the least generate a positive atmosphere for success.

A Company, of the 7th Combat Aviation Battalion, took the sword in hand and perpetuated the lessons learned from joint training. On 1 June 1981, A Company deployed nine UH-1H Huey helicopters to the coastal and mountainous region of Camp Pendleton Marine Corps Base in southern California. The weather was typical of the terrain, offering low lying fog in the morning hours along the coast and hot semi-humid temperatures in the mountain areas. Our mission was to perform individual, platoon and company size training using all the skills and experience heretofore accumulated as Army aviators. But this wasn't enough. An element of suspicion was introduced which when confronted could either create greater confidence in our overall mission readiness, or prove to be a shadow to our total mission employment capabilities. Vietnam had determined that the eventuality of joint interservice operations was real. Just as real are the eventualities for such operations

①The morning of the assault and rescue attempt, with the aircraft secured topside, Marine Amphibious Assault/Rescue forces come aboard. ②With the objective in mind, the last aircraft bids farewell and presses on toward the enemy shoreline. ③Upon reaching the shoreline, the flight carefully prepares to enter the prebriefed route toward the objective. ④As the mission progresses, the flight passes over secretly positioned amphibious and armor vehicles standing by should the aircraft take decisive defensive fires by the enemy. ⑤At a secret location deep in enemy territory, the flight rendezvous with prepositioned friendly forces for final arming and refueling. ⑥As the Marines contemplate what lies ahead and their mission orders, the door gunner alertly scans the air route perimeter for possible enemy detection. ⑦Once over the objectives, the Marine assault force rappels to the building tops to begin the rescue attempt. ⑧The extraction having begun, the aircraft begin their long and dangerous flight back to sea having sustained few casualties. ⑨As the flight deck crew directs the aircraft onto the pitching deck, the crew breathes a sigh of relief as those rescued contemplate their return to freedom.

in the future in a mid-range environment.

A Company participated with the 2d Battalion, 1st Marines in an airmobile rescue operation in a MOUT (military operations on urbanized terrain) environment with no prior briefing as to the tactical situation or requirement. Just as in a "real world" scenario, A Company was alerted to fly to a specific assembly area and from the ground floor receive a mission brief as though the situation were totally secret and without warning. I am pleased to acknowledge that A Company not only accomplished the tasks as briefed, but also surpassed all expectations of both Army and Marine Corps evaluators.

The exercise described above demonstrates the need for continual liaison and joint training with the other military services. For just as A Company participated in an exercise using Marine tactics and incorporating Army nap-of-the-earth flying techniques without any prior knowledge of the tactical scenario, Army aviators worldwide may possibly be called upon to augment or roundout the firepower and mobility of a joint task force should the world situation dictate.

A Company departed Camp Pendleton for North Island Naval Air Station, on Coronado Island (located at San Diego) on 6 June 1981. There we participated in onboard ship landing qualification. Each aviator in turn performed approaches, landings and aircraft launches on the *USS Dubuque*, an LPD (amphibious transport dock) provided by Surface Forces of the Pacific Command, U.S. Navy. The interchange of ideas, missions and responsibilities again broadened the mission readiness capability of A Company. As an aviation combat assault company, the mission performed by A Company the week before, with the Marines, most probably would have been initiated from the decks of a Navy surface vessel. As such, the need for selected Army Aviation units to maintain currency in over-the-water, shipboard qualification becomes of paramount importance.

A Company was awarded plaques by both the Marine Corps and the Navy for outstanding performance in accomplishing the mission at hand.

NUCLEAR BIOLOGICAL CHEMICAL

WE CAN'T WAIT FOR IMPROVEMENT

CW3 Clifford S. Berg Jr.
247th Medical Detachment
National Training Center
Fort Irwin, CA

ARMY HELICOPTER aviators are not training with their personal protective nuclear, biological and chemical (NBC) equipment. This unwillingness to train with the equipment is the result of four human factors and two equipment factors. The four human factors deal with awareness, priorities, training and confidence. The equipment problems deal with the chemical protecive overgarments and current methods of storing the protective masks in the aircraft.

Awareness

Much of the Army Aviation community lacks a strong sense of urgency and appreciation for the NBC environment, due perhaps to the lack of a thorough understanding of the intent and capabilities of the Warsaw Pact threat. That lack, in turn, stems from inadequate NBC training at battalion level and below. NBC threat awareness instruction is the first step to a well organized NBC training program, and may be provided by the battalion S2. A shifting of training priorities must follow close behind.

Priorities

Aviation trainers have to give sufficient priority to operations in the NBC environment, and it's generally accepted that in-flight NBC training is necessary. They also know, however, that it is very unpopular. Because of the "it will never happen to me" attitude of much of the aviation community, it is often difficult to convince aviators that practice is urgently needed. Another possible reason for this lack of training emphasis is that very few units conduct evaluation of in-flight tasks under full mission oriented protective posture (MOPP) conditions.

Training

Aircrew training manuals (ATMs) in the past suggested or required very little flight with the mask worn and did not task the individual pilots to perform actual flight maneuvers under full MOPP conditions. This is the reason the U.S. Army Aviation Center, Ft. Rucker, AL, has initiated a program to include NBC

conditions in the ATMs. Further, command policies usually combine with strict safety overtones, which severely restricts such training. Most routine helicopter training missions do not include flight tasks under full NBC conditions. This could be done, however, with some additional planning and preparation to take full advantage of flight training opportunities.

Confidence

As a rule, crewmembers lack confidence in their NBC equipment. They feel the protective gear is not to be trusted. This feeling may or may not be justified, but the attitude persists. More familiarity with that personal NBC protective equipment through more intensive training is one way to remove that distrust.

Confidence in personal equipment is not the only problem. Aviators also doubt their leaders' ability to get accurate and timely enemy NBC threat information on the battlefield. If the leaders don't have access to real time NBC reports, the in-flight MOPP level requirements are difficult to ascertain. The only alternative to this situation is to insist upon a full MOPP. This means that full NBC protective equipment must be worn anytime chemicals have been used in the theater or are threatened in the theater. Flights under full MOPP conditions drastically increase crewmembers' fatigue. This fatigue rate is a very important factor, and is given a very high priority in the research and development of NBC protective equipment. Unfortunately, the equipment available today discourages crewmembers' use of the gear because it does cause high fatigue levels.

Protective Equipment

The NBC protective equipment is very uncomfortable to wear in flight. First, the overgarments are bulky, restrictive in nature and add to the probability of heat injury. Second, the protective mask increases the weight load on the wearer's neck and causes the facial area to sweat. Third, the protective mask reduces vision in the areas of acuity, depth perception and peripheral vision. Moreover, the mask restricts head movement in closed-in areas such as a helicopter cockpit. Many of these problems can be limited by effective training, but it requires diligence and perserverance by unit trainers.

Protective Mask Storage

Current methods of storing the protective masks in the helicopter are unacceptable to most aviators. As a matter of fact, attack and scout helicopter crews do not have a designated place to store their personal protective masks and have to use a location which denies immediate in-flight access (ammo bay). According to current doctrine, in-flight access to the protective mask is not a consideration. When threat intelligence or NBC reports indicate a need for the mask, it will be put on prior to flight. Thus, if chemicals have been used in the theater or are a viable threat as in Europe, the NBC protective ensemble including the mask will be worn for all missions. During a post-crash evacuation if the NBC equipment is not being worn or readily available it will most likely become separated from crewmembers. This will cause problems escaping and evading through a contaminated environment unless the full ensemble is worn.

An apparent increase of interest in the NBC environment is quite noticeable at higher levels of the Army. Some commanders in the aviation community are directing their subordinate leaders to place more emphasis on the NBC threat. With the shifting of training priorities and the proposed ATM changes, unit trainers will include flight tasks under NBC conditions. With additional involvement the aviation community will also develop a respect for the Warsaw Pact NBC threat. Restoring pilot trust and confidence in the NBC equipment will come through actual flight with the system. Proficiency will be the end result.

Industry is working on a more comfortable protective mask and a light, cool, flame hardened, protective overgarment. We will not be able to change the "when in doubt wear it" doctrine with a protective mask until we have cockpits with overpressure. Facing bleak facts is always difficult. The bottom line is that the helicopter crewmembers cannot wait for future equipment improvements to begin their NBC training. Summed up in the words of a concerned aviator: "If we're not doing it now, we're dead!"

Directorate of Evaluation/Standardization

REPORT TO THE FIELD

Crewmember Standardization—a followup to last month's coverage of "The Army Standardization Program."

A BRIEF REVIEW of recent FLIGHTFAX publications will reveal some interesting facts pertaining to crewmember standardization deficiencies which were contributing factors to aircraft mishaps. During Aviation Resource Management Surveys (ARMS), crewmember standardization has been noted to range from outstanding to nonexistent.

What is crewmember standardization? Crewmember standardization is similar to the aviator standardization program but pertains to nonaviator personnel*. It is the quality assurance program that provides the aviator with a knowledgeable and professional crew.

Whom does it affect? The program impacts on all who are supported by the aviation unit and directly influences total crewmember coordination and professionalism.

AR 350-1, ARTEPs (Army Training and Evaluation Program) and the Soldier's Manuals require standardized procedures be used. The following are excerpts from AR 350-1:

"5-1. General. The Army Standardization Program ensures that common operational, tactical, logistical, administrative and training tasks, drills, and procedures will be performed in a single prescribed manner throughout the Total Army."

"5-2. Objectives. The objectives of the Army Standardization Program are as follows:

a. Standardize the procedures used by soldiers and units to operate, maintain, and fight major weapon and equipment systems.

b. Identify those basic tasks that can and should be performed in the same manner and to the same standard in like units throughout the Army.

c. Reduce the effects of personnel turbulence following reassignment within the same or to a different unit.

d. Enhance cohesion by reducing locally modified practices and procedures."

"5-3. Policy.

a. The Army Standardization Program will be implemented in all Active Army and Reserve Component units Armywide.

b. Tasks, drills and procedures of this program will be performed in the manner and to the standards prescribed in Army publications."

The following is a brief synopsis of "crewmember" related mishaps extracted from FLIGHTFAX:

☐ Volume 9, number 35, 17 June 1981. The following is a direct quote from this FLIGHTFAX:

"Aircraft lifted slingload, and strain was applied to sling straps. Crewchief was looking at load through cargo hook hole. One of the nylon straps broke and snapped up through cargo hole, hitting and severely bruising crewchief's eye. Crewchief was not wearing helmet visor down, and load may have been incorrectly rigged."

This individual was very lucky. He could have completely lost his sight or incurred other serious injury. Chapter 8 of each operator's manual requires a crew briefing be conducted to ensure a thorough understanding of individual and team responsibilities. The briefing should include, but not be limited to, copilot, flight engineer, crewchief, mission crew operators, and ground crew responsibilities, and the coordination necessary to complete the mission in the most efficient manner. In the Aviator Qualification Course and the Instructor Pilot Course, wearing the visor down during external load operations is a highly emphasized item during the crew briefing. After one leaves the formal course of instruction, what happens to these standard procedures? Are they forgotten? Should you not check your crew briefing to ensure that it covers this important item?

☐ Volume 10, number 7, 11 November 1981.

This mishap involved an aircraft during ground taxi. The mishap review commentary states that, due to their position, neither the ground guide nor the crew chief could properly judge the required distance to clear the aircraft for a turn. The pilot was told he was clear to turn. The aircraft struck a telephone pole causing $105,000 damage.

☐ Volume 10, number 13, 13 January 1982.

This is another ground taxiing mishap. Both nonaviator crewmembers were attempting to provide adequate clearance instructions from inside the aircraft. The aircraft was taxied into a utility pole causing $595,000 damage.

Maneuvering in proximity to obstacles requires good crew coordination. Standard procedures and terminology must be used to ensure understanding among all crewmembers.

☐ Volume 9, number 21, 11 March 1981.

This FLIGHTFAX states: "The crew may have misidentified which engine (multiengine aircraft) was malfunctioning." The engine was secured; then the other engine fire light came on and the other engine was secured.

All crewchiefs and flight engineers must be knowledgeable of emergency procedures. If the emergency procedure requires additional crewmember information to be provided to the pilot(s), the crewmember must be fully knowledgeable of the procedure and how to perform the required task.

☐ Volume 10, number 10, 2 December 1981.

The service member boarded to ensure all passengers

* *All personnel required to perform any task as part of an aircraft crew, whether officer or enlisted. Examples: crewchief, flight engineer, medic, door gunner, aerial observer, etc.*

had properly secured their seatbelts. He felt the aircraft vibrate, and saw the ramp was being moved up. He motioned to the crewchief that he was going to exit, vaulted over the ramp, and fell 25 feet to the ground. He had jumped over the ramp, thinking the aircraft was still on the ground; however, a maximum performance takeoff was being made.

This brings several questions to mind. Where was the crewchief, and what was he doing? Why wasn't the "service member" stopped? What about the before-takeoff checklist item "crew, passenger and mission equipment check"?

There are numerous reports of crewchiefs who have crawled under the tailboom of a parked aircraft while the rotor was turning. It is inconceivable that an individual would jeopardize his life just to get to the other side.

How many times have personnel used improper refueling procedures or worn protective clothing improperly?

During engine starts, crew personnel are seen performing fire-guard duties, positioning themselves in the turbine engine disintegration critical area.

The list is lengthy and most of us can say we have heard it all before. These are examples of problems that continuously involve crewmember standardization and coordination. The type aircraft involved is irrelevant. It is just as important for the OH-58 pilot and crewchief or CH-47 crew to have standardized operational procedures. All *crewmembers* must realize they are a *team*. No team is effective unless it practices together and everyone knows exactly what is expected.

How can data be obtained about crewmember standardization? Each aircraft operator's manual, aircrew training manual, soldier's manual, and ARTEP manual provides information on the performance of required tasks. For total crew integrity, each crewmember must know the information relative to these tasks. The pilot must know what the crew is to perform; likewise, the crewchief must know what is expected for each task.

How to get started? Who directs the program? Crewmember standardization belongs at the unit level. It is the supervisor's responsibility to implement and manage the program. It has been a general practice for the "candidate" crewchief or flight engineer to receive the required training in the unit. The quality of training is totally dependent on the person in charge and those who are responsible to train the individual. Possibly, some classroom instruction is provided; however, under normal circumstances the instruction is "one-on-one" and hands-on training is on-the-job.

Quality control is really the heart and goal of the crewmember standardization program. Before the individual is released to assume crew duties, he is evaluated by a supervisor on ability to do the required tasks during a flight. Once these have been demonstrated satisfactorily, the individual may perform crewmember duties.

Continued standardization is affirmed by spot checking (no-notice evaluations) periodically. The unit aviators also serve as quality control personnel to support the program.

The program doesn't require additional personnel. Although the unit trainer and instructor pilots are the key members in the aviator and unit training program, this program should not be additional work for them. Ideally, this program should reduce the UT and IP workload and allows them to concentrate on aviator training.

Units that have an active crewmember standardization program have impressive results. It is immediately apparent as you approach the flight line that professionalism exists. In light of the lives lost and cost of mishaps, something must be done to prevent recurrence. Every unit has the opportunity to implement a crewmember standardization program. The reward is increased safety and outright professionalism.

ACTAAT CONNECTION

Aviation Center Training Analysis and Assistance Team

THE AVIATION CENTER Training Analysis and Assistance Team (ACTAAT) was formed in order to establish and maintain an effective communication link with aviation field units and to collect data pertaining to the training effectiveness of the Aviation Center. The ACTAAT visits provide an opportunity for field units to provide input into the training programs of the Aviation Center thus increasing training effectiveness and producing a final product which readily meets the needs of those units. In the area of assistance, the team provides training support materials and briefings on Aviation Center training plans and programs. It further serves as a point of contact at the Aviation Center for information exchange and field feedback.

During the first 18 months of its existence, the ACTAAT team conducted visits to numerous U.S. Army field aviation and air traffic control units. However, time and funding affect the frequency with which these visits may be conducted. Current plans call for annual visits to units in Korea and USAREUR (U.S. Army Europe) with the remaining units being visited every 30 to 36 months. This feature, the ACTAAT Connection, is an effort to provide timely information to all Army Aviation and air traffic control units. The *Aviation Digest* will carry at least one ACTAAT Connection each month, covering all matters relating to Army Aviation. This month's covers National Guard Slot and appears on page 35.

ALSE OR ELSE

Why Aviation Life Support Equipment and Training?

LTC Clarence Suggs III
Aviation Safety Specialist
National Guard Bureau

THE SEASON IS winter in one of the northwestern states. The weather is visual flight rules (VFR), 2,500 foot ceiling and 5 miles visibility with an approaching cold front and forecast of snow and instrument meteorological conditions (IMC) after 2000 hours. At about 1700 hours an Army National Guard (ARNG) aviator and his qualified observer prepare to return to the Army Aviation support facility (AASF) after supporting brigade headquarters on an all-day field training exercise. A walkaround inspection and startup are completed using the checklist, and the 1 hour and 30 minute flight to home station begins. The flight will be flown over several miles of uninhabited area, and the aviator is unable to maintain radio communication at the altitude he must fly.

About 45 minutes into the flight, over heavily wooded and uninhabited terrain, the engine fails and the aviator is forced to autorotate into the trees. The main rotor blades contact the trees on descent causing the mast and transmission to separate from the aircraft. The observer suffers fatal injuries and the pilot receives some cuts, bruises and a compound fracture of the ankle. The aviator drags himself out of the aircraft and hobbles to sit at the base of a nearby tree to pull himself together and contemplate his situation. As the aviator looks into his survival vest he is thinking of all the times he meant to replace the worn, broken, lost or damaged items and replace the batteries in his survival radio. There is no cold climate aircraft kit onboard, for money was not programed for its purchase. With night and a cold front bringing snow, strong winds and decreasing temperatures, this aviator's outlook for survival is grim, to say the least.

You can write the conclusion to this story from your own personal experience. Will you be prepared to survive when faced with a similar situation?

The ARNG Aviation Division's interest in aviation life support equipment (ALSE) goes back several years. The Aviation Division realized a need for ALSE to provide the aviator with the proper equipment to cope with a survival situation. It didn't take long to further realize this equipment would have to be inventoried, inspected and maintained if it was to be in a serviceable condition for its intended purpose. The original idea of having the aviator or crewchief responsible for his ALSE did/does not work. Time-change items in the vest presented a particular problem, as the user was seldom aware of the required changes to his kit. Other items in the vest were not maintained satisfactorily. Helmets were transported and stored in automobile trunks and worn without subsequent inspec-

tions until something on the helmets failed.

The initial thrust of the ALSE program by the Aviation Division was toward the procurement of equipment. As more equipment reached the hands of the user in the states, it became increasingly apparent something had to be done to maintain the vast amounts of costly equipment. Since the Army did not offer any programs of instruction in ALSE, the Air Force and Navy training programs were considered for attendance by ARNG personnel. The Air Force school at Chanute AFB, IL, provided some necessary training on like items of equipment, but taught Air Force supply/procedures, used Air Force publications and regulations and covered many items of Air Force equipment not in the Army inventory.

The Air Force training helped meet the need, but a growing requirement for an Army school continued. The Aviation Division looked at various instructional programs for ALSE training during the period from 1974 to 1979. The effort to have an ARNG ALSE training program proceeded in earnest in 1979 with the approval of a program of instruction (POI) and the programing of the funds necessary to conduct the training at the National Guard Professional Education Center (NGPEC), Camp Robinson, AR.

The POI included classes in supply, procurement, issue, inspection and maintenance of ALSE. Survival was taught as a classroom subject to show the practical need for ALSE and methods of using the equipment. The class length was 6½ days. The overall response to the classes was excellent.

At this writing, 115 ARNG technicians and full-time manning (FTM) personnel have received training at NGPEC. Every ARNG AASF, Army Aviation Flight Activity and Aviation Classification Repair Activity Depot now has a technician trained in ALSE. There are many excellent ALSE programs now in existence at our ARNG aviation facilities, with two key factors being present. First, the facility commander recognizes the need for ALSE and directs the program by providing technician time to work on ALSE, and the required work space, storage facilities and budgetary support for procurement of necessary equipment. Second, the technician assigned the ALSE responsibility shows a keen interest in the program, pursues the program with diligence and innovative ideas and puts in many, many hours of hard work.

Where do we go from here? The ARNG Aviation Division formed an ALSE Committee to pursue the ARNG ALSE program needs. This committee consists of members of the three branches of the Aviation Division—Logistics; Operations and Training, Safety; and the Multi-Media Group. The ARNG ALSE Committee has prepared and submitted budgetary proposals for funds to provide additional manpower and equipment. A proposal also has been submitted for a survival field training exercise for selected ARNG technicians to instruct them in the proper care and use of ALSE in a field environment.

ALSE training has begun, but we have only scratched the surface. With the introduction of more sophisticated equipment necessary for survival on the modern integrated battlefield, increased training on maintenance and field use of ALSE will be required.

ARMY NATIONAL GUARD

CONNECTION

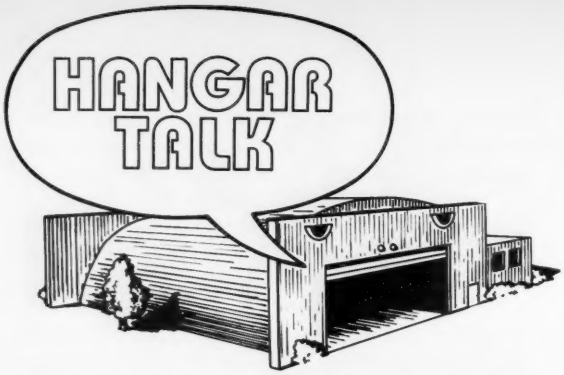
ACTAAT

Aviation Center Training Analysis and Assistance Team

GUARD SLOTS

ISSUE: When the National Guard sends an individual to flight school and for some reason he fails to complete the course, why does the National Guard pay the full cost and not get reimbursed the difference or awarded an additional slot?

COMMENT: Flight school quotas are requested from Headquarters, Department of the Army by the National Guard Bureau (NGB) and controlled by the NGB school's branch. The individual unit does not fund for initial entry rotary wing (IERW) courses but is given the authority and dollars to send an individual to IERW by the NGB. The NGB gives these school quotas to the states each year. If the students selected by the states/units fail to complete the course, it is not a question of refunding money, there is none to be refunded; IERW is a NGB funded/controlled program. The question for the individual unit/state is how to obtain another quota for the unit/state. Normally none are available. (Directorate of Evaluation and Standardization, ARNG-LNO)



"Hangar Talk" is a quiz containing questions based on publications applicable to Army Aviation. The answers are at the bottom of the page. If you did not do well, perhaps you should get out the publication and look it over.

DOD FLIP
General Planning

CW2 Gary R. Weiland
Directorate of Training Developments
U. S. Army Aviation Center
Fort Rucker, AL

1. An airport advisory area is the area within ____ miles of an airport without a control tower or where the tower is not in operation and on which a flight service station is located.

A. 3 B. 5 C. 10

2. An Army aviator acting as his or her clearance authority for a flight should sign which block(s) on the DD Form 175 (Military Flight Plan)?

A. Pilot in Command
B. Approving Authority
C. Both A and B above

3. When conducting a standard formation flight, the flight leader will set his transponder for normal squawk and wingmen will ____.

A. Turn transponders off C. Squawk low
B. Squawk standby D. Squawk 0000

4. Which DOD FLIP publication provides a list of VOR (VHF omnidirectional range) airborne checkpoints?

A. Area Planning Documents
B. General Planning
C. En Route Supplements
D. Flight Information Handbook

5. The general term "airspeed" as used in pilot/controller communications refers to ____ airspeed.

A. Indicated C. True
B. Calibrated

6. When flight is conducted at the minimum obstruction clearance altitude (MOCA), acceptable navigational signal coverage is assured only within ____ statute miles of a VOR.

A. 15 B. 25 C. 40

7. When in radar contact, aviators are not required to report leaving an assigned holding fix or point unless specifically requested by air traffic control.

A. True B. False

8. Minimum sector altitudes (MSA) depicted on approach charts provide at least ____ feet of obstacle clearance within a ____ mile radius of the navigation facility upon which the procedure is predicated.

A. 1,000, 10 C. 2,000, 10
B. 1,000, 25

9. What services are provided to arriving VFR (visual flight rules) aircraft by Stage II terminal radar facilities?

A. Traffic advisories and vectoring
B. Sequencing
C. Separation
D. A and B above
E. A and C above

10. The estimated time en route (ETE) Army pilots enter on an IFR (instrument flight rules) flight plan (DD Form 175) is the time planned to fly from takeoff to the destination aerodrome, *exclusive* of the time required for the approach at the destination and planned en route delays.

A. True B. False

The article, "Hangar Talk," in the December 1981 issue contained an error. The correct response to question 5, "Upon arrival at an airfield, when should an aviator change to the ground control frequency?" should have been choice "D"—Only when instructed by tower. The reference is the Airman's Information Manual, paragraph 235.

ANSWERS

1. C, page 2-3
2. B, para 4-2, item 28
3. B, para 5-26a (3)
4. A, para 5-51d
5. A, page 2-5
6. B, page 2-22
7. B, para 5-21a (1) (c)
8. B, page 2-22
9. D, page 2-35
10. A, para 4-2, item 15b (1)

VIEWS FROM READERS

Editor:

Please forward one copy of the article written by MAJ R.W.P. Patterson on OPFOR training in the November 1980 ***Aviation Digest***.

WO1 Michael P. Slattery
D Co. 82d CAB
Ft. Bragg, NC

Editor:

Request one copy of each of the four articles concerning aviation warrant officer retention, entitled as follows:

"A Matter of Concern"	Aug 81
"The Facts Which Influence The Decision to Leave"	Sep 81
"An Evaluation of Demographic Items"	Nov 81
"A Matter of Action"	Dec 81

Thank you for your consideration.

CW4 Norman R. Patterson
Aviation Safety Officer
ACT 3d ACR
Ft. Bliss, TX

Editor:

Please forward a copy of "Nuclear, Biological, Chemical Training and Development" which was published in the August 1981 issue, and also a copy of "Nuclear, Biological, Chemical Decontamination Problems," published in the October 1981 issue.

Mr. Terry Patton
HQ, 102d U.S. ARCOM
St. Louis, MO

Editor:

Request one copy of Part I (The Origins) of the "From Balloon to Black Hawk," forward aeromedical evacuation story . . . (Part II was excellent).

Colonel Richard B. Stuart, M.D.
Commander
U.S. Army Medical Department Activity
Ft. Polk, LA

Editor:

I am enclosing the attached poem and artwork which I hope you can print in a Views From Reader's column.

1LT Wayne P. Johnson
Ft. Rucker, AL

At times in sunlit solitude of drifting clouds,
as turning on the wind I flew,
climbing I've gazed down upon a windswept broken shroud.
Hovering where, as I looked 'round, motionless it seemed—
above the spinning earth I've untold passed.
There joined with fleeting speed, as if in distant dream,
my agile craft on high once more,
with Rotor in the Green.

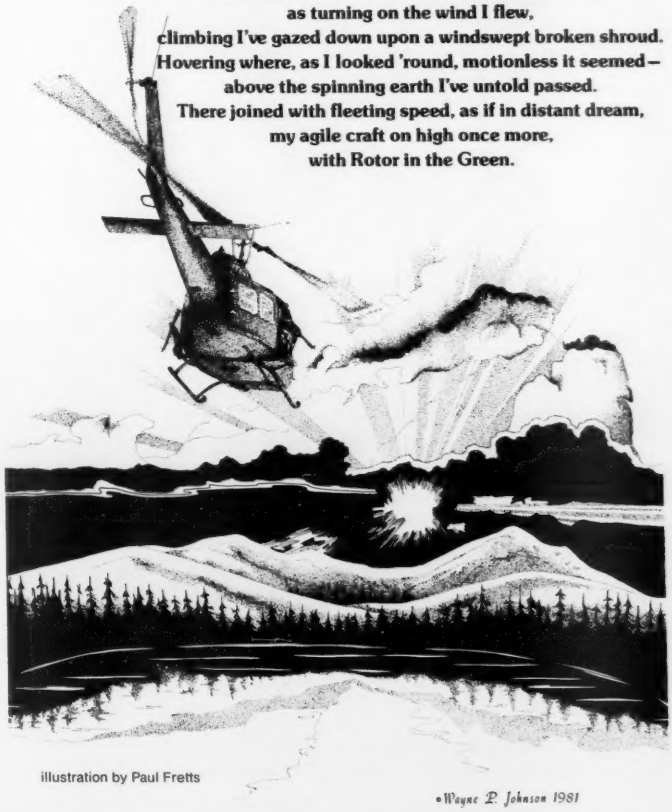


illustration by Paul Fretts

•Wayne P. Johnson 1981

Articles from the *Aviation Digest* requested in these letters have been mailed. Readers can obtain copies of material printed in any issue by writing to: Editor, *U.S. Army Aviation Digest*, P.O. Drawer P, Ft. Rucker, AL 36362

The Apache undergoing preflight

Keeping the APACHE Flying and Fighting

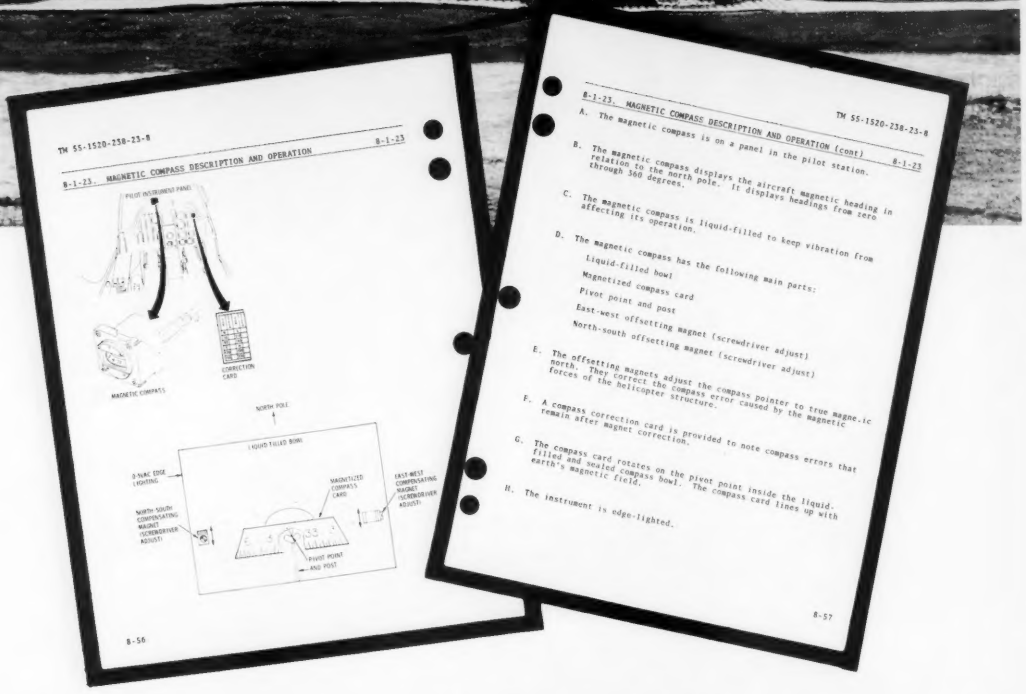
Major Troy J. Roop
TSM Attack Helicopters
Fort Rucker, AL

THE AH-64A APACHE was designed from the wheels up to be the most combat effective aircraft the Army has ever developed. The aircraft is a day/night, all weather fighter capable of operating anywhere in the world. The AH-64A was designed to be almost invulnerable to 12.7 mm and have a low vulnerability to 23 mm high explosive incendiary rounds. The rugged construction and design tend to maximize the crashworthiness of the aircraft whereby there is a 95 percent probability of crew survival associated with a 42 foot per second vertical impact. One of the goals is to "save the crew and repair the helicopter to fight again." Seems like a simple enough comment; however, the inevitable question is: Can it be done within logistics and maintenance concepts already established in the Army?

The underlying guideline which governed development of concepts for the maintenance to be performed on the AH-64 was that it should be performed at the level where it is economically sound and where it will contribute most to the aircraft's combat effectiveness. AR 750-1, "Army Materiel Maintenance Concepts and Policies," provided the regulatory framework. To do this has required the maximum use of modules, direct exchange procedures and built-in fault detection/location system (FD/LS). The preceding concepts were applied to the entire AH-64A system which includes the basic helicopter, avionics, armament and peculiar ground support equipment. Test, measurement and diagnostic equipment, and common ground support equipment were limited to the maximum extent possible to just those items currently in the inventory or items being developed as part of other programs. In addition, the aircraft design is such that maintenance characteristics are enhanced by providing easy access to components and by reducing the need for special tools, stands and power supplies.

Aviation unit maintenance (AVUM) for the Apache is essentially the same as for the other Army aircraft. Basically all preventive maintenance functions associated with dailies, phases and special inspections are accomplished at

The Apache with cowlings opened and ready for inspection


TM 55-1520-238-23-8

8-1-23

8-1-23. MAGNETIC COMPASS DESCRIPTION AND OPERATION

PILOT INSTRUMENT PANEL

CORRECTION CARD

MAGNETIC COMPASS

NORTH POLE

LIQUID FILLED BOWL

D-VIAC EDGE LIGHTING

MAGNETIZED COMPASS CARD

EAST-WEST COMPENSATING MAGNET (SCREWDRIVER ADJUST)

NORTH-SOUTH COMPENSATING MAGNET (SCREWDRIVER ADJUST)

PIVOT POINT AND POST

8-56

TM 55-1520-238-23-8

8-1-23. MAGNETIC COMPASS DESCRIPTION AND OPERATION (cont)

8-1-23

A. The magnetic compass is on a panel in the pilot station.

B. The magnetic compass displays the aircraft magnetic heading in relation to the north pole. It displays headings from zero through 360 degrees.

C. The magnetic compass is liquid-filled to keep vibration from affecting its operation.

D. The magnetic compass has the following main parts:

Liquid-filled bowl

Magnetized compass card

Pivot point and post

East-west offsetting magnet (screwdriver adjust)

North-south offsetting magnet (screwdriver adjust)

E. The offsetting magnets adjust the compass pointer to true magnetic north. They correct the compass error caused by the magnetic forces of the helicopter structure.

F. A compass correction card is provided to note compass errors that remain after magnet correction.

G. The compass card rotates on the pivot point inside the liquid-filled and sealed compass bowl. The compass card lines up with earth's magnetic field.

H. The instrument is edge-lighted.

8-57

typical page sequence from the Apache maintenance manual

AVUM. The maintenance functions associated with this preventive maintenance include cleaning and minor adjustments and removal and replacement of line replaceable units (LRU) which are found to be defective through onboard FD/LS. Basic helicopter maintenance functions are limited to inspection, cleaning, adjusting, repairing and structural repair authorized by the maintenance allocation chart (MAC). Maintenance functions associated with the engines, hydraulics, power train and rotor are limited to diagnostic procedures, minor repair and replacement of major LRU assemblies and components. Subsystem maintenance functions are limited to preventive maintenance, external adjustments and operational checks, using support equipment authorized by the MAC. The Apache also has the capability to detect subsystem malfunctions using FD/LS, self-test or built-in test equipment, as applicable. Repair functions associated with faulty subsystem LRUs are limited to removal and replacement.

Apache repair efforts at aviation intermediate maintenance (AVIM) are focused on tasks associated with the repair of components or assemblies for return to AVUM and the direct exchange program. AVIM provides the capability to inspect, troubleshoot, diagnose, test, adjust, calibrate and align components and assemblies such as electrical components, hydraulic components, instruments, propulsion and drivetrain systems. AVIM also will have the capability to repair selected components and assemblies which do not require extensive machinery or rework. A somewhat new twist is the ability to repair modules at AVIM using the AN/MSM-105(V2)

Automatic Test Station. The repair of modules at AVIM will, at the present time, be limited to the identification and replacement of faulty printed circuit boards (PCB). The repair of PCBs and modules requiring the Electro/Optical augmentation (E-0) to the AN/MSM-105(V2) will be accomplished only at AVIMs located at corps level.

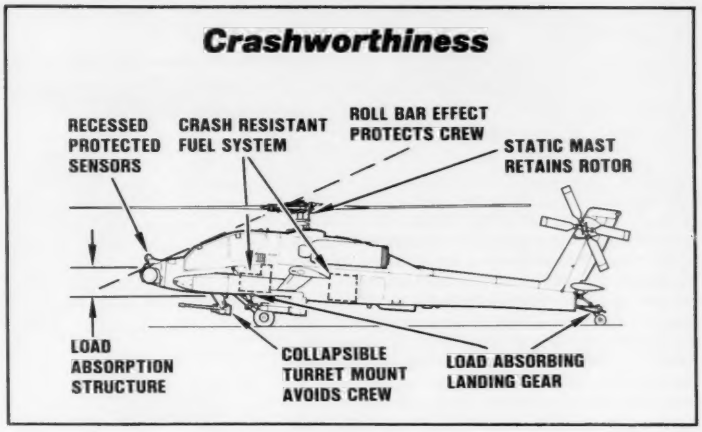
Depot maintenance for the Apache will include the overhaul/repair of components, assemblies and other selected LRUs. For the first 3 years after fielding, the depot maintenance function will be performed by Hughes Helicopter Incorporated. This particular approach will allow for an orderly transition for the Army to assume depot maintenance functions at the completion of the contractor depot support effort.

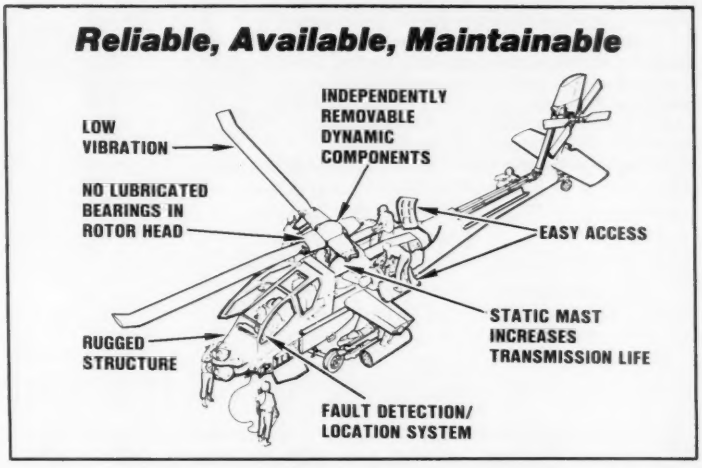
The technical manuals (TMs) that will be used by the maintainers of the Apache may well be the most innovative TMs ever developed. The manuals are easy to understand and even easier to use. They are designed using an Illustration Step Que Technique. This technique gives an illustration of the area of interest with all detailed instructions explaining the task on the same page. The TMs for the Apache have proven to be so effective that they are now being used as examples for development of other manuals.

At AVUM the only new military occupational specialty (MOS) required will be 67R, Advanced Attack Helicopter Repairman. At AVIM the only new MOS will be 35C, AN/MSM-105(V2) Automatic Test Station Operator. As new aviation systems are fielded, the 35C will support them using the AN/MSM-105(V2). As a consequence, the AN/MSM-105(V2) will become less peculiar to the AH-64.

The above explanation should have brought home the point that the AH-64A Apache has been designed to be maintained within the framework presently in use in the Army. There are no extraordinary measures or "super stud specialties" needed to ensure its availability for full combat duty. The above points were brought out during the recently completed Operational Test II (OT II) conducted at Fort Hunter-Liggett, CA. Troops from Delta and Echo (AVIM) Company, 7th Aviation Battalion, were trained to maintain the prototype AH-64s before the start of OT II. Their performance during this very important test was magnificent. It was indicative of the performance which has always characterized Army Aviation maintenance personnel. They proved beyond doubt that the AH-64A can be maintained in a field environment, under simulated combat conditions, and still meet or exceed all reliability, availability and maintainability standards established for it. The troops of Delta and Echo Companies accomplished all tasks operating within the Army's approved maintenance and logistical concepts.

In short, the development of maintenance concepts for the Apache has been thorough and has progressed with an eye toward total support for the total system. Maintainability was and is a critical element of the Apache design; this total system approach (which has been adequately tested and demonstrated) will enable Army Aviation to keep the Apache flying and fighting under the most adverse and austere battlefield conditions.





AIR TO AIR

Unless we accept the inevitability of helicopter air-to-air combat, our Army Aviation doctrine is susceptible to the same fate of negligence as that of the armor force following World War I. History has generally shown that the best effective counter to most weapons systems is a like weapon. Soviet developments in equipment and training indicate a high probability of extensive use of helicopters, which increases the likelihood of air-to-air encounters with U.S. helicopters. Even though we currently have numerical superiority, we have several shortcomings in our preparedness for air-to-air combat between helicopters. The major areas of needed improvement are training, tactics and equipment. While improvements are underway, there are some interim measures we can take to further enhance our readiness. Fundamental to these improvements is a basic change in philosophy. Unless we take action now and begin seeking needed improvements, we may repeat history at very high cost.

Don't RED X Helicopters

An Endangered Advantage

Major Everette L. Roper Jr.
Executive Officer
4th Squadron, 12th Cavalry
5th Infantry Division (Mech)
Fort Polk, LA

THE WAR IN Vietnam clearly established the helicopter as an integral member of the combined arms team. In succeeding years, doctrine and tactics have continued to evolve in a dynamic fashion.

Because we did not continue to develop doctrine for the tank force, it lagged behind the armor forces of other nations between the world wars. Ironically, helicopter doctrine is susceptible to the same fate of negligence if we do not take action soon in the area of helicopter air-to-air combat.

Over the past 6 to 7 years, military professional journals have been interspersed with articles warning of our lack of preparedness for the advent of combat between helicopters. Unfortunately, the reaction of many to this warning (this author included) has been one of casual dismissal as nonfunctional to our mission.

Perhaps an objective appraisal may be a more prudent course of action.

Combat against fixed wing aircraft will be deliberately excluded from this appraisal. This omission is not intended to belittle the high-performance fighter as a threat to helicopters. However, it is felt that the best course of action when encountering enemy fighters is, and will continue to be, reliance on our own Air Force and employment of existing passive countermeasures as outlined in FM 1-2.

Over the course of history, weapons system development has shown, in most cases, that the best defense against a particular weapon is a like weapon. For example, the best tank killer is another tank; the best defense against artillery is counterbattery fire; the best air defense is fighter aircraft; the best antisubmarine weapon is another submarine; and, in the final analysis, the rifleman's most dangerous foe is the enemy rifleman. Similarly, ground weapons systems are developed with varying balances of three characteristics. These are mobility, firepower and armor protection. The attack helicopter simply represents a trade-off of virtually all armor protection for a quantum advantage in mobility and, thus, has added a new dimension to the ground battle. It follows logically that the best defense against such a system would be one with similar characteristics.

SOVIET VIEWPOINT

One need only examine recent Soviet developments to appreciate their recognition of the importance of the helicopter on the modern battlefield. Lieutenant General Gatsolayev warned of the extensive helicopter threat facing Soviet forces and called for increased air defense measures. Lieutenant General Bayanov highly praised the performance of Soviet helicopter forces during the Berzina Exercise in early 1978. This exercise is a good example of the extent to which helicopters are integrated into Soviet tactical exercise.

Colonel M. Belov, a prolific writer concerning Soviet helicopters, has advocated the use of airmobile warfare in conjunction with airborne operations. More recently, he has placed considerable emphasis on combat against helicopters. He believes that helicopters are highly effective weapons platforms, with observation and maneuver capabilities superior to other combat vehicles. Therefore, it will be necessary to use practically all available weapons to destroy them. He suggests that the best weapon against the helicopter is the helicopter itself, and a future war between well equipped armies is bound to involve helicopter battles. He further suggests that in the future, a requirement will arise for a one-man, high-speed combat helicopter, armed with cannon and missiles for the purpose of fighting aerial battles. More salient examples of Soviet use and awareness of helicopters are the combined operations in support of Cuban forces against the Somalis in the recent Ogaden War and the extensive helicopter operations in Afghanistan.

PROBABILITY

Given the increasing Soviet propensity for use of helicopters, several scenarios exist in which helicopter air-to-air combat is imminent, if not inevitable. The first of these is the meeting engagement. As our air cavalry units conduct forward reconnaissance in the covering force area (CFA), there is a high likelihood of encountering Soviet helicopters in support of their reconnaissance forces. Engagements between the helicopters are apt to follow.

Once the situation in the CFA has developed, the division commander will be required to mass forces at the expected point of the main breakthrough attack. Extensive reliance will likely be placed on attack helicopter units to assist in the coverage on the wide frontages made necessary by the concentration of forces. Here again, in an economy of force role there is a high probability of encountering and fighting opposing Soviet helicopters.

As the enemy begins his main attack to achieve a breakthrough, he will probably send large airborne and airmobile forces deep into the rear area to attack logistics and command centers. Since the vast majority of ground combat elements will be committed forward in the main battle area, the corps and division commanders' most effective counter may well be their attack helicopter units. This is particularly true if the enemy assault can be detected early enough to be attacked while still en route. Although it can be argued that these enemy aircraft would be the responsibility of air defense units and U.S. Air Force aircraft, it is very likely that the Air Force will have more pressing problems; and air defenses are generally spread very thin, particularly in Europe.

Conversely, U.S. attack helicopters could be required to operate deep in the enemy's rear area in the conduct of raids in attacks against following echelons, or in the exploitation. In such cases, the enemy may well counter with his helicopters, as they are his most mobile asset with which to combat our helicopters.

Finally, weather conditions, particularly in Europe, may be such that Air Force close air support would be

negated, while attack helicopters could still operate. In this situation, both sides would rely heavily on the firepower of their attack helicopters. Each would logically serve as a defense against the other.

PREPAREDNESS

If helicopter air-to-air combat is that likely, we must turn our attention to our own readiness for such combat. A review of ***Military Balance*** recently showed that the United States held a significant numerical advantage (more than double) in total numbers of helicopters. However, this may well be an endangered advantage. It should be noted that the Soviet force has grown rapidly in the last decade. If helicopters follow the course of other weapons, their numerical deficiency is only temporary. Furthermore, they have developed the Mi-24 Hind, one of the most heavily armed attack helicopters in the world. Included in its armament is a 12.7 mm gun in the nose (4-barrelled in the Hind D); 128 — 57 mm rockets, 4 Swatter or Sagger antitank missiles, or 4—500-pound bombs, or 4 pod cannons. The 1979-80 ***Military Balance*** shows an increase of 270 Mi-24s over the last edition. This is a substantial increase compared to our own procurement rates.

In spite of our numerical superiority, several shortcomings exist in our preparedness for air-to-air combat. The first of these is doctrine. Essentially, when encountering enemy aircraft our actions are defensive, employing evasive action and detection avoidance. Second, training for air-to-air combat is virtually nonexistent in Army units. Training is made more difficult by the fact that no tactics for aerial combat have been published. Third, existing aerial weapons systems are not very effective against aerial targets, particularly beyond 1,000 to 1,200 meters.

This is not to imply that nothing is being done. In November 1977, the Army conducted the Air Combat Engagement (ACE) Program, which pitted a UH-1M Huey against an AH-1 Cobra in a one-versus-one test. Results showed that an aerial threat required even greater division of attention in the cockpit. After numerous simulated engagements, response time was found to be less than 10 seconds after detection. As expected, the advantage went to the aircraft that was first to place quick and accurate fire on its opponent. Similarly, insertion of nontest personnel resulted in immediate crew degradation.

A joint Army/Air Force test, development and evaluation (TD&E) program to determine the tactical problems associated with engaging armed attack helicopters is ongoing. This program, known as J-CATCH for Joint Countering Attack Helicopters, is being conducted in several phases. Phase I conducted in May 1978 at Langley AFB, VA, evaluated helicopters against various fighter weapons systems. Phase II at Ft. Rucker, AL, pitted a red force of 2 CH-3s and 4 UH-1Ns against a blue force of 3 AH-1S Cobras and 2 OH-58A scouts. One of the findings of the ACE Program was the need for force-versus-force study. Phase III of J-CATCH at Eglin AFB, FL, pitted fighters against the red helicopter force. The lessons learned from Phases II and III were then brought together for a joint evaluation in Phase IV at Eglin. Phase V will test air defense and ground combat units against the threat force. This will be followed by Phase VI, which will combine all forces to include A-10s. Instrumented results from J-CATCH should assist in developing new tactics and techniques. However, publication of training literature is likely to be 2 to 3 years away, even if everything goes according to schedule with no inter-service disagreements. In the interim, we continue with our shortcomings *unless* we make a concerted effort to improve.

IMPROVEMENTS

What, then, can be done in the near term? Three major areas warrant consideration—training, tactics and equipment.

Training is the area which can be influenced most readily by unit commanders. The first training step should be an increased knowledge of aircraft characteristics. Aviators should know the strengths and weaknesses of their aircraft, including operating limitations and capabilities, emergency procedures and weapons

characteristics. They must be made aware of the threat. Threat training should be designed to give aviators a working knowledge of the extent of the threat and the characteristics, tactics and techniques of employment of threat aircraft.

All of the training discussed above can be conducted on a unit level in a classroom environment. However, training for air-to-air combat also should be conducted in the field. Foremost in this area is the use of aerial targets during gunnery training. This could be accomplished in any of several ways. A group of large balloons could be raised and lowered from a target bunker downrange. Helicopter silhouettes could be attached to moving target cars on existing tank gunnery ranges. Drones could be used in conjunction with air defense unit gunnery. Aerial targets towed by helicopters could be used. On gunnery ranges, concurrent training could be conducted in such things as aircraft recognition, range estimation, and actions on contact, as well as any of the classroom instruction listed above. Obviously, all of these would require extensive initiative, planning and coordination on the part of the trainer.

Air-to-air combat between helicopters should also be incorporated into field training exercises. Normally, the first response to this suggestion is that opposing forces operating at nap-of-the-earth (NOE) altitudes create a safety hazard. While this is true, this type of exercise can be adequately controlled by "chase ships" operating at altitude. Also, a graduated training process of one on one, two versus one, two versus two, etc., would enhance crew proficiency and safety.

Realism could be added by coordination with other services, allies or National Guard units with different types of aircraft, to form aggressor helicopter units. On a centralized basis at corps level or higher, an exercise similar to the Tactical Air Command "Red Flag" exercise could be developed.

It has been suggested that the Army develop an organization equivalent to the Navy's "Top Gun" program, one consisting of a few selected officers extent that the enemy is engaged at the time and place of *our* choosing. Friendly strengths of speed, who would develop tactics and techniques and then train selected aviators from various units. This program could be centralized at the Aviation Center at Fort Rucker, AL, or operated as a mobile training team from a major command headquarters. In any case, it is imperative that the aviation community proceed with realistic and innovative training in aerial combat. Virtually everyone who has written on the subject agrees that training is a key element in air-to-air combat.

An argument can be made that a significant shortfall in training will exist as long as there are not any established tactics. Nonetheless, we should forge ahead using whatever tactics are available, developing new ones by experimentation and incorporating changes as they are published. As valid conclusions become available from tests, such as J-CATCH, they should be published, even if in the form of preliminary results. Dissemination could be through training circulars, draft manuals, journals or by classified means if necessary. Refinement could then occur as results are scientifically validated.

It should be noted, though, that many of our existing techniques are appropriate for air-to-air combat. Movement techniques outlined in FM 17-50 and FM 17-95 are just as valid against an enemy helicopter threat as they are against the ground threat. As indicated in FM 1-2, maximum use should be made of the combined arms team. Enemy attack helicopters can be engaged by preplanned artillery, tactical air, air defense weapons or fire from friendly ground units. All of this adds up to teamwork with other members of the combined arms.

Common sense dictates other principles for aerial combat. Maximum use should be made of terrain and airspace. Whenever possible, the sun should be used to impair the enemy's vision. Concealment is facilitated by operating in shadows and with a terrain backdrop. In those cases where contact is in a friendly air defense environment, or in an area where enemy air defenses are sparse, initiative may be gained by altitude. Every attempt should be made to control the battle to the

maneuverability, and smaller size should be capitalized upon and enemy weaknesses exploited.

In addition to tactics, enhanced readiness requires consideration of certain equipment improvements. There is no question that the introduction of the AH-64 Apache into the inventory will be a step in the right direction. Its ability to carry 16 HELLFIRE missiles, 76 2.75 inch rockets, and 800 rounds for its 30 mm cannon makes it a formidable platform. However, other equipment advances are also essential.

The first requirement often proposed is that of an air-to-air missile for our attack helicopters. This is a very controversial issue. It has been argued that the mission of attack helicopters is to support the ground commander as a part of the maneuver force, and that the addition of air-to-air missiles would only detract from this capability. On the other hand, some feel that a requirement exists for an air-to-air engagement capability that could be provided by a light, fire and forget missile, such as the Stinger, which would weigh less than the HELLFIRE antitank missile. The requirement is probably valid and can best be filled by a lightweight, multipurpose missile. Undoubtedly, technology can provide such a missile without significant degradation of the antitank capability.

Others feel that use of attack helicopters for air-to-air security would be too costly. Thus, the solution lies in arming scout aircraft for this mission. Off-the-shelf aircraft have been suggested in order to avoid the expensive research and development process.

If this approach is the answer, why not go to a single-seat "fighter chopper"? The idea of single-seat fast, maneuverable, armed helicopters in large numbers has been suggested before. Although this may seem a bit farfetched, it certainly should not be ignored or discounted as not being a viable concept.

Other minor equipment changes could be accomplished now. The ACE Program showed a need for relocation of cockpit switches to decrease engagement times. Rearview mirrors, which could be helpful in other areas, may prove vital in air-to-air combat. Improved munitions might well enhance the effectiveness and range of cannon and machinegun fire.

CONCLUSION

Perhaps even more fundamental than equipment improvement and development of tactics is a basic change in philosophy. Rather than employing "clearly defensive" actions or relying primarily on other systems for engagement, we should employ violent offensive tactics. This is not to say that we should attack threat helicopters for the sake of attack alone, nor does it imply a change of primary mission. It is simply that when enemy helicopters are encountered on the battlefield, and undoubtedly they will be, the *first* course of action should be an immediate and vehemently executed attack. Field Marshall Rommel once said,

"I have found again and again that in encounter actions, the day goes to the side that is first to plaster its opponent with fire."

Failure to do so may result in a valuable asset falling prey to the enemy.

It has been said that "Victory in the helicopter battle will belong to those possessing the initiative, foresight and the technologically modern machines needed to carry out the task." Unless we accept the inevitability of helicopter air-to-air combat, and begin seeking new doctrine and tactics and better training and equipment, we may find ourselves in the same state of preparedness as our armor force was at the beginning of World War II. The price for rectifying such a state would be repaid in saving lives of American Soldiers.

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FLIP Supplement: 'P' Fields

Mr. Dennis Newport
U.S. Army Air Traffic Control Activity
Aeronautical Services Office
Cameron Station, Alexandria, VA

WATTA WE DO now chief? There's a big mean looking so and so with a tanker parked in front of our bird and he says we got to pay him four bucks "landing fee" before we can bug out.

This subject has come up several times recently so we figured a little education might be appropriate. The "P" designation in FLIP Supplement airport data means "Public" in the sense of being opposite to "Private." The "P" assures unrestricted operation of facilities and landing rights at those locations where public money has been invested under various federally funded aviation development programs. At most "P" fields there is an area provided for free parking of government aircraft if the pilot requests it; however, there is no real guarantee that some fee will not be charged. As an example, at one of the major Washington, DC airports, if the pilot does not specifically ask for the government ramp (which is way out in the south 40) and "inadvertently" parks on one of the commercial areas leased to the Fixed Base Operators (FBO), he will be subject to fees unless a purchase is made. At many locations parking is free unless tiedown is required or your stay will be longer than 1 or 2 hours.

Other conditions that may generate a landing or user fee to transients are the basing of five or more government aircraft at an airport, or a quota system based either on movements (300 or more) or gross weight (movements times weights, if in excess of 5 million pounds) in a calendar month. The key to this type of limitation is usually the official business only or PPR note in the supplement data for joint civil/military fields. The AOPA has identified 26 different categories of fees that may be charged to civil aircraft at so-called "Public Fields." Some of these may be levied on you if you don't ask for the free spot.

To avoid problems with fees the following may be helpful:

- Check FLIP for fee information while planning your flight. If in doubt, call in advance.
- Contact tower, FSS or FBO (unicom) for information on public (free) parking after landing.
- At civil fields ascertain obligation prior to leaving aircraft unattended.
- When possible, bill landing or user fees to the government. Reimbursement for cash payment may be difficult.

Tell us like it is for a change. We'll investigate and validate, and take action in FLIP so others don't "get took."

Readers are encouraged to address matters concerning air traffic control to:
Director, USAATCA Aeronautical Services Office, Cameron Station, Alexandria, VA 22314

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40th Birthday of ARMY AVIATION and FORT RUCKER

THE U.S. ARMY Aviation Center will celebrate the 40th anniversary of Army Aviation and Fort Rucker 4 to 6 June 1982. Plans for the historic event are now firm and scheduled events are:

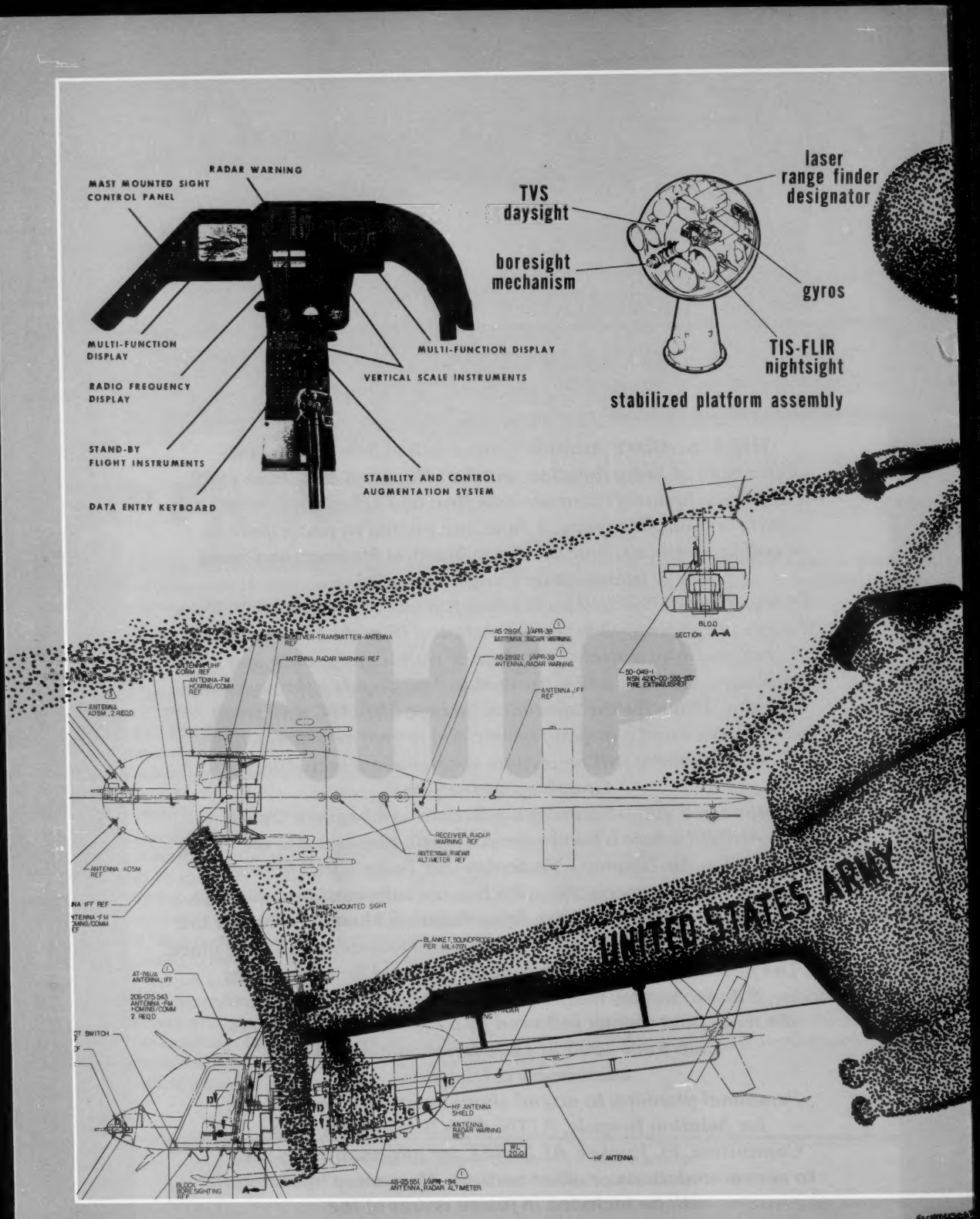
Early arrivals, Thursday, 3 June, are invited to participate in a golf tournament, tour the Army Aviation Museum and meet friends at an Early Bird social.

Friday, 4 June: This will be the first full day of planned activities. The morning highlight is the 1st Aviation Brigade 10K run. Open houses/informational displays of training, research and museum facilities, and a carnival will be ongoing throughout the day. Plans for the afternoon include JRROTC drill team performances and a brigade review and retreat ceremony. In the evening there will be various social events including a Grasshopper reunion.

Saturday, 5 June: Saturday's schedule will begin at Cairns Army Airfield where a band concert, static displays and the Army Aviation Air Display—Yesterday and Today—will fill the morning. That afternoon the open houses/informational displays, carnival, dedication of the new Army Aviation Museum site and the memorialization of the Warrant Officer Career College will take place. The formal AAAA Aviation Ball will be held Saturday night.

Sunday, 6 June: Sunday morning there will be a memorial service at the main post theater followed by a brunch at the Officers' Club from 1000 to 1300 hours to close the anniversary celebration.

Personnel planning to attend should write to Commander, 1st Aviation Brigade, ATTN: 40th Birthday Planning Committee, Ft. Rucker, AL 36362, for information relating to accommodations or other matters. Also, more information will be included in future issues of the ***Aviation Digest.***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STABILITY AND CONTROL AUGMENTATION SYSTEM
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boresight mechanism
laser range finder designator
gyros
TIS-FLIR nightsight
stabilized platform assembly
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ANTENNA, RADAR WARNING REF
ANTENNA-FM HOMING/COMM REF
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